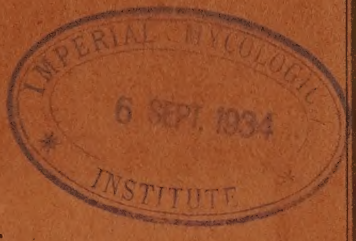
THE

ADVISORY DEPARTMENT

IMPERIAL COLLEGE OF TROPICAL AGRICULTURE.



REPORT

ON THE

Agricultural Department

ST. KITTS-NEVIS

1933.

ISSUED BY THE COMMISSIONER OF AGRICULTURE

FOR THE WEST INDIES.

1934.

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Letter of Transmittal.

C.A. 799/34.

5th July, 1934.

Sir,

I have the honour to transmit the Report of the Agricultural Department, St. Kitts-Nevis, for the year ended December 31st, 1933.

2. The St. Kitts Sugar industry experienced a satisfactory year and a record crop of 24,167 tons of sugar was manufactured, this being 4,198 tons more than the previous record obtained in 1932. The greater production during 1933 was largely due to an increase in the acreage of cane reaped, namely, from 6,537 acres in 1932 to 7,604 acres in 1933.

3. The St. Kitts factory purchased canes from the planters at 10s. 6.07d per ton plus a share of the profits, amounting to 3s. 10.53d., making a total payment of 14s. 4.6d. per ton.

4. The Government has assisted considerably in making arrangements for the Basseterre Sugar Factory to purchase canes in Nevis through an agent, who has undertaken to ship the canes to St. Kitts, and in order to facilitate purchasing from producers has erected two weigh-bridges situated respectively at Charlestown and Newcastle. During the 1933 crop, Nevis growers were paid 9/6 per ton for canes delivered at these scales.

5. About 75% of the canes grown in Nevis at present consist of the White Transparent variety, which is very susceptible to Gumming Disease, and the Department is endeavouring to replace this variety with B.H.10(12) and S.C.12/4. Over 96,000 cuttings of the latter varieties were distributed during the year.

6. During the period 1932—34 sixteen sugar-cane field experiments were undertaken in St. Kitts by the Department: the results of those investigations, which relate to varietal, manurial, spacing and cultivation problems, are recorded in this Report. The organisation and supervision of the experiments have involved a considerable amount of work and the conclusions arrived at should prove to be of decided value.

7. During the year a St. Kitts Sugar Cane Investigation Committee was formed which will control and finance future experimental work. The Committee consists of representatives of the planters, the St. Kitts Sugar Factory, the Agricultural Department, and the Imperial College of Tropical Agriculture. The part time services of Mr. P. E. Turner, Soil Chemist to the Sugar Cane Investigation Committee of Trinidad, were obtained for advice regarding the experimental programme, and the first set of experiments under the scheme has already been laid down. The supervision of the experiments is being undertaken by the officers of the Agricultural Department. The formation of the Committee has enabled the experimental work to be considerably extended, and, in addition to ensuring continuity, has stimulated much keenness and co-operation among the various sugar interests.

8. The rearing and liberation of *Lixophaga diatraeae* in St. Kitts for the control of sugar-cane moth borer was continued, and the establishment of this parasite throughout the island is recorded. Moth borer is a very serious pest in Nevis and it is proposed to introduce *Lixophaga* into that island during 1934.

9. Low prices and accumulated stocks resulted in the production of Sea Island cotton in the Presidency being further reduced to 40,641 lbs. of lint during 1933. A West Indian Sea Island Cotton Association, of which the Cotton Growers' Associations in St. Kitts and Nevis are members, was formed during the year. It is hoped that the work of the West Indian Association will be of material assistance to the industry.

10. Forty-three of the sixty-nine allotments on Low Ground Land Settlement in Nevis are now under cultivation by peasants, and the Government is now contemplating the purchase of Hamilton Estate for land settlement purposes.

11. Some 1,300 crates of tomatoes were exported from Nevis by the Department, and the fruit, apart from being generally small, was of good quality. Market conditions, however, were bad, largely owing to heavy Bahamas competition and very cold weather, and the average net return showed a loss of about one-third cents per lb. apart from the advance made.

12. The Department in St. Kitts continues to render valuable assistance to the agricultural community and the Reports from the Agricultural Instructors in Nevis and Anguilla indicate that very useful work is being accomplished.

I have the honour to be,

Sir,

Your obedient servant,

(Sgd). A. C. SHILL,

Acting Commissioner of Agriculture

His Honour,
The Administrator,
ST. KITTS, B.W.I.

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STAFF OF THE AGRICULTURAL DEPARTMENT, ST. KITTS-NEVIS.

Agricultural Superintendent	R. E. Kelsick.
Assistant Agricultural Officer	G. B. Gregory, D.I.C.T.A. (Trinidad).
Agricultural Instructor, Nevis	W. I. Howell.
Agricultural Instructor, Anguilla	E. O. R. Lake.
Assistant Clerk	P. Carter (from 1st April, 1933).

Report of the Agricultural Department, St. Kitts-Nevis,

For the year ended 31st December, 1933.

DISTRIBUTION OF PLANTS AND SEEDS.

The distribution of plants during the period under review was as follows:—

Ornamental trees and plants	383
Grafted mangoes (Julie)	50
Grafted avocados	1
Budded grapefruit	7
Budded oranges	16
Budded tangerine	2
Lime seedlings	10
Papaw plants	14
Guava plants	4

SEEDS.

Cotton seed	915 lbs.
Onion seed	25 „
Onion seedlings	3,000
Green dressing seed	36 lbs.
Yams for planting	502 lbs.
Vegetable seeds	935 pkts.
Sugar Cane cuttings	12,108

INTRODUCTION OF PLANTS AND SEEDS.

The following seeds and plants were presented to the Department:—

Budwood of Valencia Orange, Dancy Tangerine, King Orange, Duncan Grapefruit and Triumph Grapefruit by the Department of Agriculture, Dominica; 6,000 cuttings of the cane variety B.2935 by the Department of Agriculture, Barbados; 10 cuttings of cane variety M.28 by the Porto Rico Agricultural Experiment Station; seeds of the Talipot Palm by the Department of Agriculture, Antigua; various seeds by Prof. Juan Balme, F.R.H.S., Mexico. Seeds of Wynne Grass (*Melinus minutiflora*) were imported from the Jamaica Agricultural Society. The Commissioner of Agriculture forwarded small quantities of seed of the small shallot onion of Madras and the Dhulia onion of Bombay for trial.

EXPERIMENTAL WORK ON MINOR CROPS.

Sweet Potatoes. Plots of the following varieties of sweet potato were grown: Black Rock, Sorry for the Poor, Sister Simmonds, Never Miss, Statia, V.52, Yellow Jersey and Bert. Trials were also made with three St. Kitts seedlings.

Yams. Plots of the varieties Langy, Lisbon, Oriental and Horn were grown.

Cassava. The following varieties were grown: Black Stick, French No. 3, Jack Roe, White Greenaway and Sweet No. 1.

Onion. Seeds of the small shallot onion of South India and of the Dhulia Onion (white) of Bombay were received from the Commissioner of Agriculture for trial. Bulbs of satisfactory size and good flavour were obtained.

Cauliflower. Plots of the varieties Maincrop Benares and Early Patna were grown from seeds supplied by the Commissioner of Agriculture. "Heads" of satisfactory size were obtained and there is now a considerable demand for this vegetable during the season. Many of the plants which were reserved for seed supply failed to set seed. Some seed has, however, been obtained for trial during the next season.

Maize. Trials with the large grain dent variety obtained from Trinidad were continued. The plants were severely attacked by stripe disease.

WORK CONNECTED WITH INSECT AND FUNGUS PESTS AND THEIR CONTROL.

SUGAR CANE.

Gumming Disease.

The position with respect to this disease continues to be satisfactory.

Mosaic Disease.

This disease was not observed during the year.

Rind Disease.

This disease was observed on canes which had been damaged by moth borer and weevil borer.

Moth Borer (Diatraea saccharalis, Fabr.).

Colonies of the parasite *Lixophaga diatraeae* were reared and distributed to the remaining sections of the island by Mr. J. E. Mestier, Chief Chemist of the St. Kitts (Basseterre) Sugar Factory, Ltd. In the absence of Mr. H. E. Box, Entomologist (Colonial Development Fund, Antigua), Mr. Mestier was responsible for the mass rearing and liberation of the parasites recorded in the report for 1932. In July Mr. Box visited the island and made a survey for the purpose of obtaining information regarding the spread of *Lixophaga diatraeae* and the progress that had been made in its use as a controlling agent for *Diatraea saccharalis* in cane. It was found that the parasite had spread satisfactorily and appeared to have established itself throughout the island. No doubt it will be some years before the reduction in borer infestation will become fully apparent from the annual records of cane infestation at each estate at the reaping of the crop. These records are being kept at the St. Kitts (Basseterre) Sugar Factory.

Weevil Borer (Metamasius hemipterus).

Damage caused by this insect to cane was observed on several estates. Effective control of the small moth borer should help to reduce attacks by the weevil borer.

COTTON.

The cotton leaf worm (*Alabama argillacea*) was not observed during the 1933 season and there was no damage to the crop by this pest.

The larvae of the pink bollworm (*Pectinophora gossypiella*) were found on the anthers of flowers soon after the first flowers had appeared. Severe damage was done by this insect to the later planted cotton. To reduce the damage by this pest the planting of the whole crop should be extended over as short a period as possible. In St. Kitts the greater part of the cotton crop is grown on lands from which ratoon canes are reaped, so that the period during which cotton is being planted has sometimes to be more extended than is desirable.

OTHER CROPS.

Considerable damage was done to the leaves of citrus plants at the Experiment Station by grasshoppers. Control was attempted by spraying with lead arsenate and by the use of criddle mixture. Neither of these methods proved to be very effective. The sugar cane root borer (*Exophthalmus esuriens*) also damaged the leaves and roots of citrus plants. Scale insects were also fairly prevalent.

Slugs were not as abundant as in 1932.

PROGRESS IN CHIEF INDUSTRIES.

THE SUGAR CANE INDUSTRY.

The sugar crop of 1931–33 was the largest on record. The average rainfall of the island for 1932 was 77.27 inches, being 22 inches above the average for the past nineteen years and the highest recorded for very many years. At no time in 1932 did the crop suffer from lack of moisture, but the early part of 1933 was extremely dry and there was considerable drying of the canes with a corresponding loss in weight. During the reaping of the crop it was also found that the damage by the storm in September, 1932, was greater than was indicated by the general appearance of the canes, lodging of the canes having caused considerable rotting. Nearly all fields of P.O.J.2878 were found to have been seriously damaged. It is estimated that yields were reduced by the storm from 10% to 15%.

From estates' returns the acreage reaped for the crop was 7,604 acres, which was about 1,000 acres more than the acreage harvested in the previous year. The cane produced amounted to 184,543 tons equivalent to an average yield of 24 tons per acre. The St. Kitts (Basseterre) Sugar Factory manufactured 24,167 tons of grey crystal sugar from 186,648 tons of cane supplied by growers in St. Kitts and Nevis. This output is equivalent to an average yield of 3.13 tons of sugar per acre. The sugar was sold at an average price of £9. 18. 3 per ton, which was slightly higher than the price obtained in 1932. According to the terms of the contract with the St. Kitts (Basseterre) Sugar Factory the planters were paid 10s. 6.07d. per ton for their canes and a share of the profits amounting to 3s. 10.53d. per ton making a total payment of 14s. 4.6d. per ton of canes. The shareholders received a dividend of 15 per cent.

For the 1932—34 crop it is estimated that 7,700 acres will be reaped in St. Kitts. The average rainfall of 1933 was 63.97 inches, being 13 inches less than the average of 1932. During the period of maximum growth of the crop the effective rainfall, expressed as "degrees of wetness" was, however, greater in 1933 than in 1932. The "degrees of wetness" of each month for a station in the Leeward district and one in the Windward district are shown in the attached graphical records. ("Degree of wetness" is calculated by multiplying the

average daily rainfall for the month by the number of wet days). The average yield per acre for the 1932—34 crop should therefore be somewhat higher than the yield of the previous crop. The crop is estimated at 26,000 to 27,000 tons of sugar of which approximately 800 tons will be manufactured from canes supplied from Nevis.

SUGAR CANE INVESTIGATION COMMITTEE.

During the year a Sugar Cane Investigation Committee was formed. On this Committee there are representatives of the Sugar Planters, the St. Kitts (Basseterre) Sugar Factory, the Agricultural and Commercial Society, the Agricultural Department and the Imperial College of Tropical Agriculture, Trinidad.

The Committee will deal with all matters relating to experimental work on the sugar cane crop and has obtained the part-time services of Mr. P. E. Turner, Soil Chemist to the Sugar Cane Investigation Committee of Trinidad. Mr. Turner visited the island in September and drew up a scheme of experimental work, which is incorporated with full details in the report on his visit to the island. The Agricultural Department is responsible for carrying out the experiments and during the year nineteen of the twenty-four experiments were laid down. The experiments are scattered around the island and the experimental programme has involved a considerable increase in the work of the Department.

EXPERIMENTAL WORK WITH SUGAR CANE UNDERTAKEN BY THE DEPARTMENT.

The following experiments with sugar cane were conducted by the Department during the season 1932—34 and the results are recorded in this report.

Variety Trials.

Plant Canes	One experiment
First Ratoon Canes	Two experiments

Manurial Trials.

Plant Canes	Four experiments
First Ratoon Canes	Six experiments
Second Ratoon Canes	One experiment

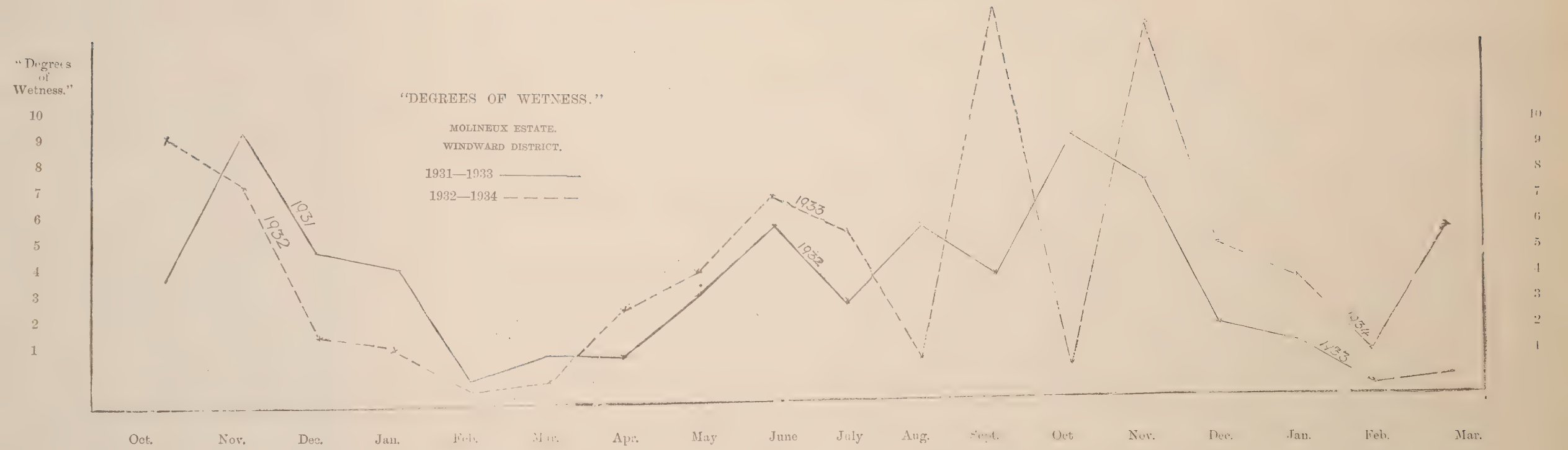
Spacing Trial.

First Ratoon Canes	One experiment

Cultivation Trial.

First Ratoon Canes	One experiment

In Tables I, II, III, and IV the monthly rainfall at the different stations during the period of growth is compared with the mean monthly rainfall for the station during preceding years.


"DEGREES OF WETNESS."
MOLINEUX ESTATE.
WINDWARD DISTRICT.
1931—1933
1932—1934
"Degrees of Wetness."
10
9
8
7
6
5
4
3
2
1
1931
1932
1933
1932
1934
1935
Oct.
Nov.
Dec.
Jan.
Feb.
Mar.
Apr.
May
June
July
Aug.
Sept.
Oct
Nov.
Dec.
Jan.
Feb.
Mar.

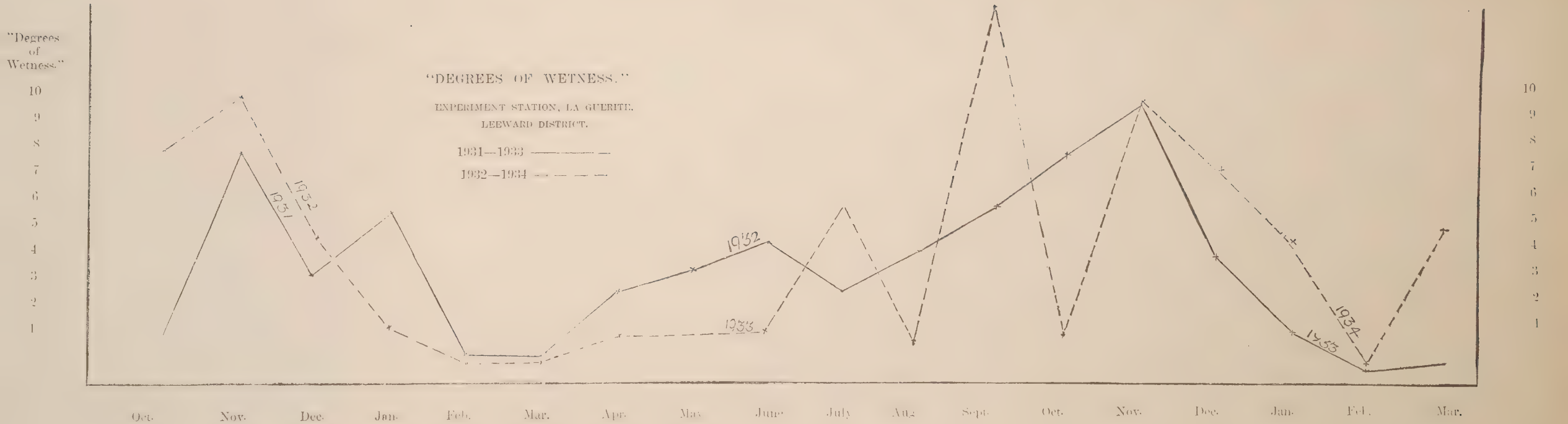

"Degrees of Wetness."
10
9
8
7
6
5
4
3
2
1
"DEGREES OF WETNESS."
EXPERIMENT STATION, LA GUERITE.
LEEWARD DISTRICT.
1931—1933
1932—1934
1931
1932
1932
1933
1934
1933
Oct.
Nov.
Dec.
Jan.
Feb.
Mar.
Apr.
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Jan.
Feb.
Mar.

TABLE I.

Stations.	West Farm.		Douglas.		Estridge.	
Month.	Average rainfall, inches 1919-1933.	Rainfall, inches, crop period April, '32 to May, '33 Excess or deficit.	Average rainfall, inches 1923-1933.	Rainfall inches, crop period April, '32 to May, '33. Excess or deficit.	Average rainfall, inches 1919-1933.	Rainfall inches, crop period April, '32 to May, '33 Excess or deficit.
April	2·59	+ 0·64	2·58	+ 0·13	4·47	+ 0·76
May	2·80	+ 4·90	3·41	+ 3·75	3·94	+ 7·58
June	3·49	+ 2·09	4·21	+ 1·26	3·80	+ 1·76
July	4·29	+ 0·19	4·67	- 0·59	4·71	+ 1·47
August	5·13	+ 1·34	5·98	- 0·93	5·34	+ 2·08
September ...	6·18	- 2·69	7·33	+ 0·03	7·22	- 1·17
October	5·00	+ 4·02	5·48	+ 2·55	5·90	+ 2·56
November ...	5·96	+ 5·03	7·10	+ 6·30	7·50	+ 7·81
December ...	4·23	+ 0·44	4·34	- 0·57	4·25	- 1·48
January	3·45	- 1·37	2·88	- 0·79	2·93	- 1·54
February ...	2·29	- 1·14	1·58	- 0·56	2·01	- 0·67
March	2·72	- 1·74	2·76	- 1·82	2·62	- 1·93
April	2·59	- 0·96	2·58	- 0·67	4·47	- 0·64
May	2.80	+ 0·39	3·41	- 0·54	3·94	- 0·01
Total	53·52	+ 11·14	58·31	+ 7·55	63·10	+ 16·58

TABLE II.

Stations.	Belmont.		Molineux.	
Month.	Average rainfall inches. 1920-1933.	Rainfall, inches, crop period April, '32 to May, '33 Excess or deficit.	Average rainfall, inches, 1919-1933.	Rainfall inches, crop period April, '32 to May 1933. Excess or deficit
April ...	4·91	+ 2·00	5·65	+ 0·08
May ...	5·69	+ 9·18	4·32	+ 5·17
June ...	5·12	+ 2·33	4·70	+ 3·43
July ...	5·34	– 0·67	5·13	+ 1·32
August ...	6·81	+ 1·89	6·04	+ 3·14
September ...	7·65	+ 2·39	7·87	+ 0·06
October ...	7·24	+ 0·86	7·14	+ 5·84
November ...	7·17	+ 12·41	7·85	+ 5·50
December ...	4·44	– 0·78	4·58	– 0·12
January ...	2·93	+ 0·34	3·41	– 0·42
February ...	2·51	– 1·43	2·54	– 0·81
March ...	3·00	+ 0·74	3·23	– 1·15
April ...	4·91	– 1·55	5·65	– 0·42
May ...	5·69	+ 2·54	4·32	+ 1·77
Total ...	73·41	+ 30·25	72·43	+ 23·39

TABLE III.

	Buckleys.		Mills.		Molineux.		Molineux & Mills Mean.	
	Average rainfall, inches 1919-1933.	Rainfall, inches, crop period Nov., '32 to March '34. Excess or deficit.	Average rainfall, inches, 1920-1933.	Rainfall inches, crop period Nov., '32 to March '34. Excess or deficit.	Average rainfall, inches 1919-1933.	Rainfall inches, crop period Nov., '32 to March '34. Excess or deficit.	Average rainfall, inches 1919-1933.	Rainfa inches, crop period Nov., '32 to March '34. Excess or deficit.
Nov. ...	6·09	+ 5·41	6·68	+ 5·50	7·85	+ 5·50	7·27	+ 5·50
Dec. ...	4·35	+ 0·73	3·74	– 1·17	4·58	– 0·12	4·16	– 0·64
Jan. ...	3·41	– 1·17	2·96	– 0·83	3·41	– 0·42	3·19	– 0·63
Feb. ...	1·99	– 1·27	1·78	– 0·54	2·54	– 0·81	2·16	– 0·67
March...	2·57	– 1·48	2·52	– 1·43	3·23	– 1·15	2·88	– 1·29
April ...	3·12	– 0·30	2·99	– 0·67	5·65	– 0·42	4·32	– 0·54
May ...	2·97	– 0·56	3·45	– 0·35	4·32	+ 1·77	3·89	+ 0·71
June ...	3·49	– 1·02	3·55	+ 3·20	4·70	+ 4·85	4·13	+ 4·02
July ...	4·45	+ 2·93	4·26	+ 2·29	5·13	+ 3·92	4·70	+ 3·10
Aug. ...	5·30	– 2·86	5·64	– 3·75	6·04	– 2·70	5·84	– 3·22
Sept. ...	6·90	+ 6·72	6·79	+ 7·81	7·87	+ 11·67	7·33	+ 9·74
Oct. ...	5·15	– 0·83	5·54	– 4·30	7·14	– 3·56	6·34	– 3·93
Nov. ...	6·09	+ 4·66	6·68	+ 4·65	7·85	+ 5·78	7·27	+ 5·21
Dec. ...	4·35	+ 3·08	3·74	– 0·42	4·58	+ 1·30	4·16	+ 0·44
Jan. ...	3·41	+ 1·94	2·96	+ 2·25	3·41	+ 2·91	3·19	+ 2·58
Feb. ...	1·99	– 0·65	1·78	– 0·41	2·54	– 0·52	2·16	– 0·46
March...	2·57	+ 2·10	2·52	+ 1·34	3·23	+ 3·24	2·88	+ 2·29
Total...	68·20	+17·43	67·58	+ 13·17	84·07	+ 31·24	75·87	+ 22·21

TABLE IV.

Stations.	Mansion.		College.	
Month.	Average rainfall, inches, 1919-1933.	Rainfall inches, period, November, '32 to March, '34. Excess or deficit.	Average rainfall, inches, 1914-1933	Rainfall inches, crop period March, 33, to March '34 Excess or deficit.
November	7·77	+ 7·08	...	...
December	4·26	– 0·82	...	...
January	3·36	– 0·76	...	...
February	1·95	– 0·57	...	...
March	2·67	– 1·68	2·44	– 1·71
April	4·36	– 0·37	4·03	– 1·08
May	4·39	+ 0·33	4·16	– 1·59
June	4·34	+ 3·38	4·22	+ 0·79
July	5·07	+ 2·53	5·10	+ 1·31
August	5·98	– 2·63	5·37	– 2·57
September	7·26	+ 10·51	6·39	+ 6·71
October	6·80	– 5·30	6·40	– 5·15
November	7·77	+ 4·48	7·22	+ 4·38
December	4·26	– 0·54	4·59	– 0·59
January	3·36	+ 1·65	3·18	+ 3·42
February	1·95	– 0·33	2·01	– 1·36
March	2·67	+ 2·71	2·44	+ 1·26
Total	78·22	+ 19·67	57·55	+ 3·82

VARIETY TRIALS.

Plant Canes.—One variety trial with plant canes was carried out at Molineux Estate. In this trial seven varieties were compared and the details and results of the experiment are given in Table V.

From the rainfall tables it will be seen that the rainfall was above the average during the period of maximum growth, but that the canes suffered from lack of moisture during August and October, 1933.

In this trial B.374 gave the highest yield of cane per acre, but the sucrose and purity of its juice are somewhat low. There is very little to choose between B.831, B.891 and B.H.10(12). These three varieties gave good yields of cane and good juices. Under the conditions of this experiment the varieties G.119, B.726 and S.C.12.4 were definitely not as good as the four other varieties. In the wet districts G.119 is likely to give a considerable quantity of rotten canes. B.726 has not yet come up to expectations. This variety continues to give excellent results in Barbados but under St. Kitts conditions it appears to "get away" slowly.

First Ratoon Canes.—Two trials with first ratoon canes were carried out. One at Molineux Estate (wet district) and one at Buckleys Estate (dry district). In these trials seven varieties were compared and the details and results of the experiments are recorded in Tables VI and VII.

From the rainfall tables it will be observed that the rainfall was deficient in the early portion of the growing period but later on the canes received an amount of rain above the average except in the months of August and October, 1933.

At Molineux B.H.10(12) was easily the best variety, giving a high yield of cane with juice of good sucrose content and high purity. B.726 and B.374 were the next best, the juice of the former variety showing high sucrose content and very high purity. In this district B.H.10(12) is the outstanding cane as a ratooner.

At Buckleys the first place was taken by G.119 in yield of cane per acre, but the quality of its juice was not up to the standard of the other varieties. P.O.J.2878 and B.H.10(12) gave only moderate cane yields but juice of good sucrose content. B.726 maintained its reputation for high juice quality early in the season.

The varieties B.374, B.891, B.831 (B.831 and 891 are now regarded as one variety in Barbados) and B.726 appear, from the results of these trials, to be deserving of further trial in the wet districts. G.119 and P.O.J.2878 should be grown on limited areas in the dry district. B.417 should be discarded in both districts.

TABLE V.

VARIETY TRIAL—MOLINEUX ESTATE.

PLANT CANES.

Planted November, 1932 Reaped 4th. to 6th. April, 1934.

Manurial Treatment—25 tons pen manure per acre before planting and 2 cwt. Sulphate of Ammonia in January, 1933.

Variety	Cane		Extraction Per Cent	Sucrose in juice lbs. per gallon	Purity	Sucrose in juice lbs. per acre	Sucrose in juice tons per acre
	Tons per acre	Per Cent of Mean					
B. 374	47·80	111·9	50·3	1·875	90·8	9400	4·20
B. 831	44·50	104·1	50·7	2·068	94·0	9700	4·33
B. 891	43·86	102·7	51·9	1·999	92·5	9420	4·21
B. H. 10 (12)	43·25	101·2	51·1	2·080	92·5	9500	4·24
G 119	41·72	97·6	51·4	1·840	91·0	8220	3·67
B. 726	39·31	92·0	50·9	2·009	92·6	8330	3·72
S. C. 12-4	38·65	90·5	50·6	1·891	91·2	7700	3·44
Means	42·73	100·0	51·0	1·966	92·1	8900	3.97

System of Replication : One 7 x 7 Latin Square
Area of each plot : 1/20th. acre weighed. Border rows discarded.
Soil : Sandy loam.

The data in the above table are the means of 7 plots or analyses. The Standard Error of the difference between any two mean yields is 1·29 tons per acre and a difference of 2·63 tons per acre may be regarded as significant with a 20:1 probability.

TABLE VI.

VARIETY TRIAL—MOLINEUX ESTATE

FIRST RATOON CANES

Cut as Plant Canes March, 1933. Reaped as 1st. Ratoons 9th. and 10th March, 1934.

Manurial Treatment as Ratoons 4 cwts. Sulphate of Ammonia per acre.

Variety	Cane		Extraction Per Cent	Sucrose in juice lbs. per gallon	Purity	Sucrose in juice lbs. per acre	Sucrose in juice tons per acre
	Tons per acre	Per Cent of Mean					
B. H. 10 (12)	38 90	124·8	56·3	1·961	93·5	8910	3·98
B. 726	33·46	107·3	53·7	2·218	95·1	8210	3.67
B. 374	31·62	101·4	54·3	2·035	93·7	7250	3·24
P.O.J. 2878	30·49	97·8	53·0	2·136	92·9	7130	3·18
S. C. 12.4	28·40	91·1	51·5	2·191	94·4	6610	2·95
G. 119	27·84	89·3	53·5	2·045	93·8	6290	2·81
B. 417	27·46	88·1	53·3	2·059	93·0	6110	2·72
Means	31·17	100·0	53·7	2.092	93·8	7220	3·22

System of Replication: Four randomised blocks.
Area of each plot: 100 holes approx. 1/20th. acre weighed.
Soil: Sandy loam.

The data in the above table are the means of 4 plots or analyses. The Standard Error of the difference between any two mean yields is 1·60 tons per acre and a difference of 3·36 tons per acre may be regarded as significant with a 20 : 1 probability.

TABLE VII.

VARIETY TRIAL—BUCKLEYS ESTATE

FIRST RATOON CANES

Cut as Plant Canes February, 1933. Reaped as 1st. Ratoons 19th. to 21st. February, 1934.

Manurial Treatment 300 lbs. Sulphate of Ammonia per acre.

Variety	Cane		Extraction Per Cent	Sucrose in juice	Purity	Sucrose in juice	Sucrose in juice
	Tons per acre	Per Cent of Mean		lbs. per gallon		lbs. per acre	tons per acre
G. 119	29·66	119·9	54·3	1·975	92·3	6590	2·94
P.O.J. 2878	26·60	107·6	52·5	2·121	91.9	6130	2·74
B. H. 10 (12)	26·26	106·2	51·5	2·133	92.4	5960	2·66
S. C. 12.4	24·07	97·3	50·3	2·054	92·8	5150	2·30
B. 726	23·25	94·1	54·0	2·290	95·3	5890	2·63
B. 374	22·26	90·1	52·0	2·019	91·6	4940	2·21
B. 417	20·98	84·8	53·0	2·235	93·0	5130	2·29
Means	21·73	100·0	52·5	2·118	92·8	5680	2·54

System of Replication : Four randomised blocks.
Area of each plot : 1/20th. acre weighed. Border rows discarded.
Soil : Sandy loam.

The data in the above table are the means of 4 plots or analyses. The Standard Error of the difference between any two mean yields is 1·74 tons per acre and a difference of 3·66 tons per acre may be regarded as significant with a 20:1 probability.

MANURIAL TRIALS.

PLANT CANES.

(*a*) *Experiments comparing Pen Manure, Sulphate of Ammonia, and a complete Inorganic Fertilizer.*

One experiment was laid down at Mills Estate and one at Buckleys Estate to compare the effects of dressings of pen manure, sulphate of ammonia and a complete inorganic fertilizer on plant canes. The details and results of these experiments are given in Tables VIII and IX.

The rainfall data show that the early portion of the growth period was dry and that the canes received rain above the average during the period of maximum growth except in the months of August and October.

From the results of this trial it will be seen that there was no significant difference in yield between the complete inorganic fertilizer and pen manure treatments, but that both these treatments gave significantly better yields than the treatment in which sulphate of ammonia was used alone. These results support the recommendation that has always been given to growers that, where pen manure is not available, dressings of a complete inorganic manure should be used in preference to sulphate of ammonia. There are, however, indications that on most of the cane lands of the island applications of phosphate are not required and that satisfactory results will be obtained from the use of dressings of nitrogen and potash only. The question will be referred to again later on in the report.

TABLE VIII.

EXPERIMENT COMPARING EFFECT OF DRESSINGS OF PEN MANURE, SULPHATE OF AMMONIA AND COMPLETE INORGANIC FERTILIZER ON PLANT CANES.

Station: Buckleys Estate.

System of Replication: Three 3 x 3 Latin Squares.

Area of Each Plot: 1/20th. acre weighed. Four border rows discarded.

Soil: Sandy Loam .

Variety: S.C.12.4.

Treatments:

1. .. .. Pen Manure. Usual dressing for the island, approx. 25 tons per acre.

2. .. .. Sulphate of Ammonia, 300 lbs per acre.

3. .. .. Complete Inorganic Fertilizer consisting of:
336 lbs. Sulphate of Ammonia per acre.
112 „ Superphosphate of Lime per acre.
224 „ Sulphate of Potash per acre.

Planted: November, 1932.

Manures applied:
1. The pen manure was applied under the "centres" before planting.
2. 150 lbs. Sulphate of Ammonia were applied on the 11th. January, 1933, and 150 lbs. in July, 1933.
3. 168 lbs. Sulphate of Ammonia and the Potash and Phosphate were applied on the 11th. January, 1933, and the second dose of 168 lbs. of Sulphate of Ammonia in July, 1933.

Reaped: 12th. to 15th. March, 1934.

Summary of Results.

Treatments.	1 Pen Manure.	2 Sulphate of Ammonia.	3 Complete Inorganic Fertilizer.	Mean.
Tons Canes per acre	37.27	33.95	36.46	35.89
Per Cent. of Mean ..	103.8	94.6	101.6	100.0

Each yield in the above table is the mean of 9 plots. The Standard Error of the difference between any two mean yields is 1.06 tons per acre and a difference of 2.59 tons per acre may be regarded as significant with a 20 : 1 probability

TABLE IX.

EXPERIMENT COMPARING EFFECT OF DRESSINGS OF PEN MANURE, SULPHATE OF AMMONIA AND COMPLETE INORGANIC FERTILIZER ON PLANT CANES.

Station: Mills Estate.

System of Replication: Four 3 x 3 Latin Squares.

Area of Each Plot: Slightly under 1/30th. acre weighed. Border rows discarded at time of reaping.

Variety: B.H.10(12).

Treatments:

1. .. .. Pen Manure. Usual dressing for the island, approximately 25 tons per acre.

2. .. .. Sulphate of Ammonia—4 cwt. per acre.

3. .. .. Complete Inorganic Fertilizer consisting of:
336 lbs. Sulphate of Ammonia per acre.
112 „ Superphosphate of Lime per acre.
224 „ Sulphate of Potash per acre.

Planted: November, 1932.

Manures applied:

1. The pen manure was applied under the "centres" before planting.

2. 2 cwts. Sulphate of Ammonia were applied on the 17th. January, 1933, and 2 cwts. on the 17th. June.

3. 168 lbs. Sulphate of Ammonia and the Potash and Phosphate were applied on the 17th. January, 1933, and the second dose of 168 lbs. of Sulphate of Ammonia on the 7th. June.

Reaped: 1st. and 2nd. May, 1934.

SUMMARY OF RESULTS.

Treatments.	1 Pen Manure.	2 Sulphate of Ammonia.	3 Complete Inorganic Fertilizer.	Mean.
Tons Canes per acre	38.65	36.56	37.91	37.71
Per Cent. of Mean ..	102.5	97.0	100.5	100.0

Each yield in the above table is the mean of 12 plots. The Standard Error of the difference between any two mean yields is 0.69 tons per acre and a difference of 1.59 tons per acre may be regarded as significant with a 20 : 1 probability.

(*b*) *Experiment to determine optimum dressing of sulphate of ammonia to to be used in conjunction with pen manure.*

One trial was laid down at Molineux Estate to determine the optimum dose of sulphate of ammonia that should be applied to plant canes that had received a dressing of pen manure. The details and results of this experiment are given in Table X.

The rainfall data show that the rainfall was above the average during the latter half of the growth period, except during the months of August and October.

From the results of this trial it will be seen that, under the conditions of this experiment, the yield of cane obtained by the use of 2 cwts. of sulphate of ammonia per acre was just as good as the yields obtained by the use of 3 cwts. or 4 cwts. per acre. This result is an important one and supports the practice of plant cane treatment that has been adopted by planters for some time.

(*c*) *Experiment to determine the effect of dividing the dose of sulphate of ammonia when applied to plant canes.*

One trial was laid down at Mansion Estate to ascertain the effect of dividing the dose of sulphate of ammonia when an application of 2 cwts was made to plant canes, which had received pen manure. The details and results of this experiment are given in Table XI.

The first half of the growth period was dry, but the rainfall during the second half was above the average except for the months of August and October, 1933.

From the results of the trial it will be seen that no difference in yield was obtained when the whole dose of 2 cwts of sulphate of ammonia per acre was given at the end of the dry season and when the dose was divided, half the application being given six to eight weeks after planting and the other half at the end of the dry season.

TABLE X.

GRADED DRESSINGS OF SULPHATE OF AMMONIA AND PEN MANURE TO PLANT CANES.

Station: Molineux Estate.

System of Replication: Four 4 x 4 Latin Squares.

Area of Each Plot: Slightly under 1/30th. acre weighed. Border rows discarded at time of reaping.

Variety: B.H.10(12).

Treatments:

1. .. .. Control. (When the experiment was laid down it was not intended to give any manurial treatment to these plots, but, in the interest of the estate, an application of 2 cwt. of Sulphate of Ammonia was given in June, 1933.)

2. .. .. 15 tons of pen manure per acre and 2 cwts of Sulphate of Ammonia. The Sulphate of Ammonia was given in two doses, one-half about six weeks after planting, and the other half at the beginning of the rainy season.

3. .. .. 15 tons of pen manure per acre and 3 cwts of Sulphate of Ammonia. The Sulphate of Ammonia was applied as in treatment 2.

4. .. .. 15 tons of pen manure per acre and 4 cwts of Sulphate of Ammonia. The Sulphate of Ammonia was applied as in treatment 2.

Planted: November, 1932.

Manures applied: The pen manure was applied under the "centres" before planting. The first application of Sulphate of Ammonia was made in January, 1933 , and the second application in June, 1933.

Reaped: 10th.—13th. April, 1934.

SUMMARY OF RESULTS.

Treatments.	Control	15 tons Pen Manure 2 cwts S/A	15 tons Pen Manure 3 cwts S/A	15 tons Pen Manure 4 cwts S/A	Mean.
Tons Canes per acre	36.36	42.41	42.34	41.59	40.68
Per Cent. of Mean ..	89.4	104.3	104.1	102.2	100.0

Each yield in the above table is the mean of 16 plots. The Standard Error of the difference between any two mean yields is 0.92 tons per acre and a difference of 1.90 tons per acre may be regarded as significant with a 20 : 1 probability.

TABLE XI.

MANURIAL TRIALS.

APPLICATION OF SULPHATE OF AMMONIA TO PLANT CANES. MANSION ESTATE.

Plot	Yield, tons per acre.	
	A. Single application	B. Double application
A. 1 and B. 1	45.27	41.13
B. 2 and A. 2	41.93	52.99
A. 3 and B. 3	42.28	35.13
B. 4 and A. 4	40.61	33.06
A. 5 and B. 5	32.95	49.88
B. 6 and A. 6	40.20	37.21
A. 7 and B. 7	45.16	46.08
B. 8 and A. 8	29.72	38.59
A. 9 and B. 9	36.86	34.56
B.10 and A.10	41.59	46.66
A.11 and B.11	36.86	38.02
B.12 and A.12	39.74	38.02
Means	39.43	40.94
Difference		+ 1.51

Statistical analysis of the yield data shows that the Standard Error of the difference between the mean yields of the twelve replicates is 2.10 tons per acre. The difference of 1.51 tons between the mean yields of the two treatments is therefore not significant.

Ratoon Canes.

(*a*) *Experiments to determine the optimum dose of Sulphate of Ammonia to be given to ratoon canes.*

Trials to determine the optimum dressing of sulphate of ammonia to be given to ratoon canes were laid down at Molineux, Belmont, Estridge, Douglas and West Farm. The details and results of these experiments are given in Tables XII and XIV.

During nine months of their growth the canes had rainfall above the average.

The results indicate that, under the conditions of the experiments, approximately 300 lbs. of sulphate of ammonia per acre would be the best application to make to ratoons in the lower rainfall districts, viz., Estridge, Douglas and West Farm, and that from 300 lbs. to 400 lbs. would be the best dressing for ratoon canes in the higher rainfall districts, viz., Molineux and Belmont.

(b) Experiment to determine whether, in making an application of 2 cwts. of sulphate of ammonia per acre to ratoon canes, any increased yield would be obtained by giving the fertilizer in two applications instead of one.

One trial to obtain information regarding the above question was laid down at College Estate. The details and results of the experiments are given in Table XIII.

The canes had good weather during their growth as shown in the rainfall tables.

The results show that the application of the sulphate of ammonia to the canes about ten weeks after reaping of the plant canes gave a significantly higher yield than when half the fertilizer was applied immediately after the stumps had been moulded up and the field cultivated. The question of the effect of dividing the application when larger doses of sulphate of ammonia are used is being investigated.

TABLE XII.

MANURIAL TRIALS.

FIRST RATOON CANES.

SUMMARY OF RESULTS.

STATION.	DOUGLAS.		ESTRIDGE.		WEST FARM.	
Sulphate of Ammonia. Rate per acre.	Cane. Tons per acre.	Per cent. of mean.	Cane. Tons per acre.	Per cent. of mean.	Cane. Tons per acre.	Per cent. of mean.
400 lbs. ..	34.10	109.5	34.80	115.1	19.05	117.8
300 lbs. ..	34.40	110.5	34.49	114.1	19.80	122.4
200 lbs. ..	31.70	101.8	31.80	105.2	14.54	89.9
100 lbs. ..	29.60	95.1	27.40	90.6	14.69	90.8
nil ..	25.90	83.2	22.68	75.0	12.78	79.1
Means ..	31.14	100.0	30.23	100.0	16.17	100.0

System of Replication: One 5 x 5 Latin Square at each station.

	Douglas	Estridge	West Farm
Fertilizer applied	15. 4. 32	5. 5. 32	4. 8. 32
Reaped	14,–15. 6. 33	15,–16,–17. 5. 33	25,–26. 5. 33

The data in the above table are the means of 5 plots.

TABLE XIII.

COLLEGE ESTATE—FIRST RATOON CANES.

TIME OF APPLICATION OF SULPHATE OF AMMONIA.

Plot	Yield, tons per acre.	
	A. Early application	B. Late application
A. 1 and B. 1	34.81	43.87
B. 2 and A. 2	37.71	44.49
A. 3 and B. 3	43.90	46.62
B. 4 and A. 4	38.53	41.44
A. 5 and B. 5	38.33	35.22
B. 6 and A. 6	41.44	45.45
A. 7 and B. 7	39.36	36.26
B. 8 and A. 8	32.63	40.92
A. 9 and B. 9	38.85	40.92
B.10 and A.10	37.81	39.88
A.11 and B.11	41.44	35.94
B.12 and A.12	37.91	43.51
Means	38.56	41.21
Difference		+ 2.65

Statistical analysis of the yield data shows that the Standard Error of the difference between the mean yields of the twelve replicates is 1.28 tons. The difference of 2.65 tons between the mean yields of the two treatments is therefore significant.

(c) Experiments to determine the effect on the yield of first ratoon canes, which had received a dressing of pen manure as plant canes, of an application of potash in addition to one of sulphate of ammonia.

Two experiments to furnish information on the above question were laid down, one at Molineux Estate and one at Belmont Estate. The details and results of the experiments are given in Table XIV.

The results show that at both stations the applications of potash to the ratoon canes gave no significant increase in the yield.

(d) Experiment to determine the effect on the yield of second ratoon canes, which had received a dressing of pen manure as plant canes, of an application of potash in addition to one of sulphate of ammonia.

One experiment to supply information on the above question was laid down at Molineux Estate and the details and results of the experiment are given in Table XV.

The results show that no increase in yield was obtained from the application of potash to the second ratoon canes under the conditions of this experiment.

SPACING TRIAL.

The spacing experiment at Molineux Estate was reaped this season as first ratoon canes and the results are given in Table XVI. From the results it will be seen that in the ratoon canes, as in the plant canes, the highest yields were obtained from the closer spacings.

No results are yet available for similar trials on lands in the drier areas. The results of this trial, however, indicate that in the districts of good rainfall the best results should be obtained where the banks are spaced at 4½ feet apart and the canes planted 2 feet apart in the row, where cross-holing is not practised. For planting in holes the cross-bars should be thrown up 3 feet apart. If the banks are made 3 feet apart there is likely to be difficulty with intertillage.

TABLE XIV.

MANURIAL TRIALS.

FIRST RATOON CANES.

Stations.	Belmont			Molineux		
Sulphate of Ammonia. Rate per acre.	Cane, Tons per acre.	Per cent. of mean.	Cane, Tons per acre. With 240 lbs. Sulphate of Potash.	Cane, Tons per acre.	Per cent. of mean.	Cane, Tons per acre. With 240 lbs. Sulphate of Potash.
500 lbs. ..	43.26	109.3	43.07	44.68	102.7	44.19
400 lbs. ..	40.60	102.6	42.24	45.54	104.7	44.56
300 lbs. ..	41.86	105.8	38.60	42.98	98.8	42.80
200 lbs. ..	39.61	100.1	41.30	42.74	98.3	43.34
Nil. ..	32.52	82.2		41.56	95.5	
Means ..	39.57	100.0		43.50	100.0	
Means of Sulphate of Ammonia plots only			41.33			43.98
Means of Sulphate of Ammonia and Potash plots			41.30			43.72
System of Replication:	Four randomised blocks.					
	Belmont.			Molineux.		
Fertilizer applied ..	15 June, 1932.			10 May, 1932.		
Reaped	18, 19, 22, 23 May, '33.			2, 3, 4, May, '33.		

The data given in the table above are the means of 4 plots.

ST. KITTS.

EFFECT OF SULPHATE OF AMMONIA ON FIRST RATOON CANE.

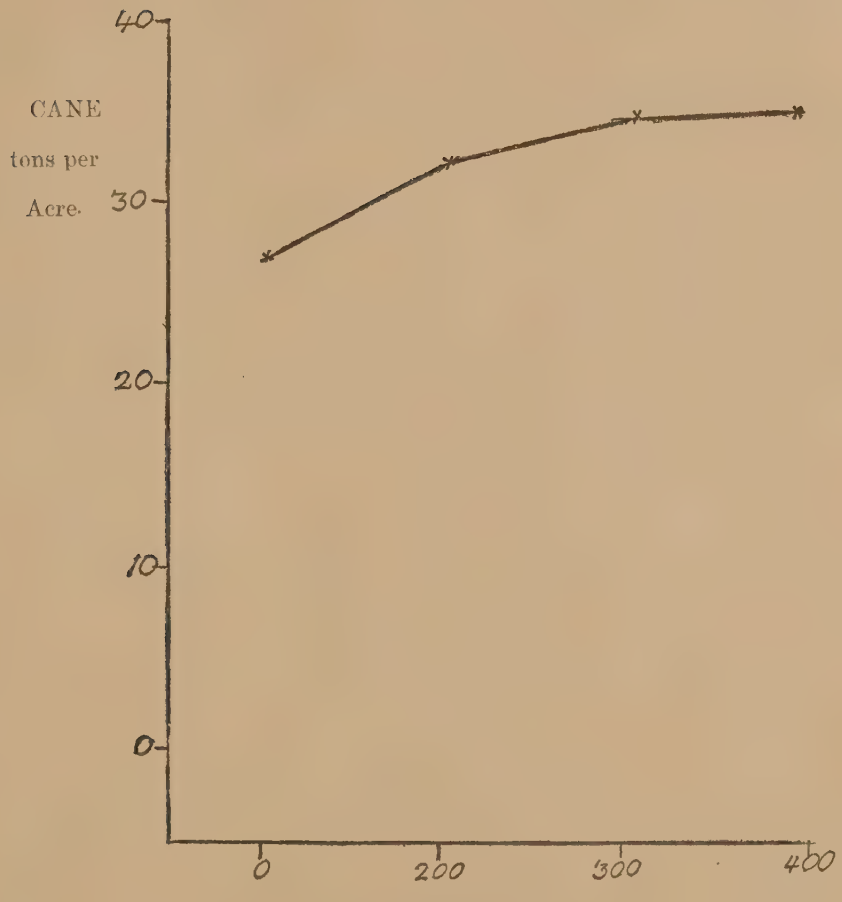


TABLE XV.

EXPERIMENT ON EFFECT OF APPLICATIONS OF POTASH TO SECOND RATOON CANES WHICH HAD RECEIVED PEN MANURE IN THE PLANT CANES AND SULPHATE OF AMMONIA AND POTASH IN THE FIRST RATOON CANES.

Station: .. Molineux Estate.

System of Replication: .. Four randomised blocks.

Area of each plot: Slightly under 1/30th. per acre weighed. Border rows discarded at time of reaping.

Variety: .. .. B.H.10(12).

Treatments: .. 1. 4 cwts. Sulphate of Ammonia per acre.
2. 4 cwts. Sulphate of Ammonia per acre and 240 lbs. Sulphate of Potash per acre.

Reaped as 1st. Ratoon Canes .. 18—23 May, 1933.

Manures applied: Sulphate of Potash on 1st. June, 1933, and Sulphate of Ammonia.

Reaped as 2nd. Ratoon Canes .. 3rd. and 4th. May, 1934.

SUMMARY OF RESULTS.

Treatments.	Sulphate of Ammonia.	Sulphate of Ammonia and Potash.	Mean.
Tons Cane per acre..	41.96	42.40	42.18
Per Cent. of Mean ..	99.5	100.5	100.0

Each yield in the above table is the mean of 16 plots.

TABLE XVI.

SPACING EXPERIMENT—MOLINEUX ESTATE, 1932—1934.

SUMMARY OF RESULTS.

Plant Canes and First Ratoon Canes.

Spacing		Plant Canes tons per acre.	Ratoon Canes tons per acre.	Total.	Per cent. of Mean.
Row Width.	Between plants.				
3 feet	4 feet.	31.84	36.34	68.18	101.7
3 „	2 „	35.26	36.51	71.77	107.0
3 „	1 foot.	37.55	38.52	76.07	113.5
4½ „	4 feet.	27.00	34.11	61.11	91.1
4½ „	2 „	33.26	35.98	69.24	103.3
4½ „	1 foot.	36.11	36.88	72.99	108.9
6 „	4 feet.	22.08	33.01	55.09	82.2
6 „	2 „	29.58	33.82	63.40	94.5
6 „	1 foot.	32.64	32.92	65.56	97.8
	Means ..	31.70	35.35	67.05	100

EXPERIMENT TO ASCERTAIN THE EFFECT OF DIFFERENT METHODS OF CULTIVATION ON THE YIELD OF FIRST RATOON CANES.

One cultural experiment was carried out on first ratoon canes at West Farm Estate.

The following treatments were included in the Experiment:

A. Stumps moulded, no further treatment.

B. Stumps moulded. Trash hauled on alternate banks. Untrashed banks subsoiled and cultivated according to usual practice.

C. Stumps moulded. Both banks subsoiled after reversing the trash. Trash left on one bank and untrashed bank cultivated according to usual practice.

The results and details of the experiment are given in Table XVII.

Conclusions.—On statistical examination it was found that the results obtained in this experiment were not significant and no conclusions can therefore be drawn from the differences observed in the yields of the three treatments. As far as yields are concerned there does not appear to be much to choose between the three methods under the conditions of this experiment, but in the matter of costs treatmentA should be considerably more economical. It may be that the additional moisture conserved in treatment A, by having all the banks mulched with trash, is responsible for an increase in the yield equivalent to the additional tonnage obtained by the cultivation of the soil in treatments B and C.

However, further trials are needed in both wet and dry areas before any definite recommendations can be made.

TABLE XVII.

CULTIVATION OF RATOON CANES.

Station: .. .. West Farm.

System of Replication: Four randomised blocks.

Area of each plot: .. 0.25 acre weighed.

Variety: .. .. S.C.12.4.

Treatments: .. .. A. Stumps moulded, no further treatment.

B. Stumps moulded. Trash hauled on alternate banks. Untrashed banks subsoiled and cultivated according to usual practice.

C. Stumps moulded. Both banks subsoiled after reversing the trash. Trash left on one bank and untrashed bank cultivated according to usual practice.

Cut as plant canes: .. June, 1933.

Fertilizer: .. .. 2 cwts. Sulphate of Ammonia per acre.

Reaped: .. .. June, 1934.

SUMMARY OF RESULTS.

Treatments.	A.	B.	C.	Mean.
Tons cane per acre ..	32.04	29.25	29.70	30.33
Per cent. of mean ..	105.6	96.4	97.9	100.0

A GENERAL REVIEW OF THE METHODS ADOPTED IN ST. KITTS FOR MANURING OF THE SUGAR CANE CROP.

The following facts relating to the climate and soil of the island will serve to indicate briefly the conditions under which the sugar cane crop is cultivated.

From the rainfall records given in this report it will be seen that the annual mean total rainfall of the island for the past twenty years at thirty stations is 55 inches. Approximately 35 per cent. (20 inches) of the rainfall is obtained in the first six months of the year and the remaining 65 per cent. (35 inches) in the last six months. The average precipitation on the Windward side of the Island is about 10 inches higher than that on the Leeward side. Years of severe drought are periodically encountered when the total mean rainfall is only about 30 inches, and in some years the distribution of the rainfall is bad. Crops are also liable to be damaged by hurricanes.

The soil of the island is of volcanic origin and is a very light, sandy loam (Average Mechanical Composition, Fine Silt and Clay 22.4 per cent.). In one or two districts in the North-Western section of the island the soil is of a somewhat heavier texture owing to the presence of a higher percentage of silt. The low-level soil is usually deep, but on the upper lands, which suffer from considerable erosion, the soil is often very shallow. The sub-soil is of open texture and very free draining. The average maximum water retaining capacity of the air-dried soil is 40 per cent. The following figures illustrate the high porosity of the majority of the cultivated lands of the island:—

EXPERIMENT STATION, LA GUERITE. LEEWARD DISTRICT.

	1st. Foot	2nd. Foot	3rd. Foot	5th. Foot
Coarse Sand, per cent. ..	58.0	61.3	40.5	71.2
Fine Sand „ „ ..	14.3	13.5	20.4	13.6
Silt „ „ ..	7.0	6.2	11.2	3.7
Fine Silt „ „ ..	8.2	9.8	16.7	2.1
Clay „ „ ..	6.2	3.5	4.7	2.6
Moisture @ 100° C.	1.9	2.0	3.2	1.2
Loss on Ignition	2.8	2.0	2.5	1.8

The soil is usually deficient in organic matter and nitrogen. Calcium Carbonate is only present in very small amounts or is entirely absent, except in the soil of areas close to Brimstone Hill. The cultivated soils of the lower levels, however, contain fair amounts of easily soluble calcium silicates, and are generally neutral or slightly alkaline in reaction. Those fields which have received regular dressings of pen manure usually contain adequate supplies of readily available phosphate and potash. The soil of the upper lands is nearly always deficient in exchangeable lime and potash as a result of intense leaching, and it is often acid in reaction.

Manuring of the sugar cane. Plant Canes. From the inception of the sugar industry it appears that pen manure was adopted as the basis of maintaining soil fertility, and planters endeavour to give the plant cane fields, as far as is possible, from 20 to 25 tons per acre. One to three crops of ratoon canes are taken from these fields. To-day the use of 2 cwts. of sulphate of ammonia per acre in addition to the application of pen manure is a fairly general practice. Increased yields from this additional dose of nitrogen probably depend on the quality of the pen manure and the rainfall during the growing season. Results of experiments regarding the effect of dressings of sulphate of ammonia on the yield of plant

canes, which have received pen manure, will be available next season. For the present, planters should be guided by their knowledge of the fertility of the different fields and of the quality of the available supply of pen manure. Experimental results this season show definitely that, under the conditions of the 1932–34 season, 3 cwts. or 4 cwts. of sulphate of ammonia, when used in addition to pen manure, give no greater increase in yield than 2 cwts. per acre. From the results obtained from an experiment on one estate in the wet district it appears that no greater yield is obtained by giving a portion of the application of 2 cwts. early and the remainder at the beginning of the rainy season, than by giving the whole application at the commencement of the wet season.

In St. Kitts the policy of maintaining animals in excess of the number required for transport and cultivation purposes in order to produce an increased quantity of pen manure has never been adopted and therefore, on most estates, the supply of pen manure is not sufficient for the plant cane fields. The results of experiments recorded in this report indicate that yields of plant canes equal to those obtained with pen manure can be obtained by the use of a complete inorganic fertilizer, but not by the use of sulphate of ammonia alone. On the majority of fields the omission of phosphate is not likely to result in diminished yields, as many tests have failed to reveal any deficiency of readily available phosphate and tests on cane juice have shown a fairly high content of phosphate. So far no response to phosphate manuring has been obtained in field tests, and just as good results should be obtained by the use of suitable mixtures of sulphate of ammonia and sulphate or muriate of potash. Whether a complete fertilizer mixture or separate inorganic fertilizer salts should be purchased will depend on the price at which suitable fertilizer mixtures can be obtained. From Table XVIII it will be seen that the soil of the upper lands is usually deficient in readily available potash and lime. On these lands applications of potash should result in increased yields and in many cases liming should also prove beneficial. The organic matter of the soil should be maintained by growing green dressing crops periodically.

Artificials versus Pen Manure. At the present time the question of substituting mixtures of artificial fertilizer salts for pen manure is receiving much consideration, as it has been stated that a crop of sugar cane can be produced at a lower cost with artificial fertilizers than with pen manure. A fair comparison of the cost of producing cane by the two methods cannot be made until the accurate cost of pen manure to an estate is known. Many planters are of the opinion that the cost of pen manure is only the cost of cartage of the manure from the pens to the fields, as the manure is regarded as a by-product of the animals that are maintained for transport and cultivation purposes. On account of the configuration of the island and the comparatively small areas involved, the adoption of mechanical traction is not likely to prove economical. The sugar cane crop has been under cultivation in St. Kitts for probably more than a century and the fertility of the soil has been maintained chiefly by adequate dressings of pen manure. Can the fertility of this very light soil be similarly maintained over a long period of years solely on the basis of artificial manures? This is the point on which information is required, and it is useless to dogmatize from results obtained in other countries where conditions of soil and water supply are entirely different. It appears that the best economic results will be obtained in St. Kitts by a judicious combination of artificial fertilizers with pen manure. Depletion of soil organic matter must be prevented. The uses of the organic matter are mainly the conservation of water and the fixation of nitrogen in the soil. In our light soils the growth of cane per unit of rainfall should be considerably greater in fields whose water retaining capacity has been improved by applications of bulky organic manures than in fields from which such applications are withheld.

The most important limiting factor to high production in St. Kitts is the water supply. Irrigation is not possible and in many years at certain periods

the rainfall is deficient, and every effort has to be made to conserve soil moisture. The planters have always endeavoured to do this by maintaining a dust mulch on their fields with shallow cultivators. Recently some workers have questioned the efficiency of this method of conserving soil moisture. It should not be lost sight of, however, that a tilled surface soil will permit quicker absorption and deeper penetration than a hard surface. In recent years mulching the surface soil with megass has been tried. There is no doubt that a heavy mulch of megass, not less than about 3 inches deep, will check loss of moisture from the soil by evaporation and prevent weed growth. During a recent very dry spell a surface soil with such a mulch was found to contain 58 per cent. more moisture than the unmulched soil. Whether the increase in yield will be sufficient to make the use of a megass mulch an economical proposition will not be known until experiments with megass mulching are reaped in 1935. At any rate the quantity of megass that will be available for mulching will not go very far if it is used in both wet and dry areas. The conservation of soil moisture is of the greatest importance, especially in the dry districts of the island.

Ratoon Canes. It is probably safe to say that to-day no planter in St. Kitts attempts to produce a crop of ratoon canes without an application of sulphate of ammonia. In the dry areas the application is from 2 to 3 cwts. per acre and in the wet areas from 3 to 4 cwts. On many estates excellent yields are now obtained from ratoon canes, but attempts to force production higher with very heavy applications of artificial fertilisers are not likely to meet with success, as there is no possibility of increasing the water supply which is the limiting factor to growth.

TABLE XVIII.

REPLACEABLE BASE CONTENTS.

Estate No.	Locality	System of manuring of fields from which samples were taken	Milligram-Equivalents per 100 grams of air-dried surface soil		
			Calcium	Magnesium	Potassium
1.	Windward district upper lands	Green dressing, Fish Manure and Sulphate of Ammonia.	7·52	2·47	0·33
,,	,, ,, ,,	Green dressing & Sulphate of Ammonia,	6·96	1·41	0·24
,,	,, ,, ,,	,, ,,	5·40	0·90	0·21
,,	,, ,, ,,	,, ,,	4·93	0·94	0·28
,,	,, low lands	Pen Manure and Sulphate of Ammonia	9·28	0·47	0·28
,,	,, ,, ,,	,, ,,	8·62	2·81	0·19
,,	,, ,, ,,	,, ,,	6·50	2·15	0·43
2.	,, upper lands	Green dressing & Sulphate of Ammonia	5·61	1·09	0·26
,,	,, ,, ,,	,, ,,	5·57	0·96	0·30
,,	,, ,, ,,	,, ,,	4·62	2·81	0·34
,,	,, ,, ,,	,, ,,	4·96	2·61	0·14
,,	,, ,, ,,	,, ,,	5·93	2·54	0·11
,,	,, ,, ,,	,, ,,	5·04	3·50	0·36
,,	,, low lands	Pen Manure and Sulphate of Ammonia	6·79	2·80	0·34
,,	,, ,, ,,	,, ,,	8·14	1·61	0·22
3	,, upper lands	Green dressing and Sulphate of Ammonia	6·32	—	0·17
,,	,, ,, ,,	,, ,,	5·29	—	0·19
4	,, ,, ,,	,, ,,	5·82	—	0·21
,,	,, ,, ,,	,, ,,	6·93	—	0·14

TABLE XVIII.—(Continued).

REPLACEABLE BASE CONTENTS

Estate No.	Locality	System of manuring of fields from which samples were taken	Milligram—Equivalents per 100 grams of air-dried surface soil		
			Calcium	Magnesium	Potassium
5.	North-West district, silty soil, low lands	Pen Manure and Sulphate of Ammonia	6·66	2·54	0·21
,,	,, ,, ,,	,, ,,	8·96	4·65	0·15
6.	,, ,, ,,	,, ,,	8·56	4·80	0·45
7.	Leeward district, upper lands	Green dressing and Sulphate of Ammonia	4·37	—	0·18
,,	,, ,, ,,	,, ,,	5·36	0·93	0·17
,,	,, ,,	,, ,,	5·60	0·82	0·13
8.	,, ,, ,,	,, ,,	5·36	2·43	0·11
9.	North-west district low lands	Pen Manure and Sulphate of Ammonia	7·71	—	—

THE COTTON INDUSTRY.

Approximately 130 acres of cotton were planted in 1933, about one quarter of the acreage allotted to the island by the 1932 West Indian Cotton Conference.

There was no damage to the crop by the cotton leaf worm, but the later planted fields were severely damaged by the pink boll worm. The out-put was also reduced somewhat by the high winds of a gale which passed North of the island on the 26th. July.

The production was 20,352 lbs. of lint, of which 17 per cent. was stained cotton. According to the Customs returns the export of cotton from the Presidency for the year was 88,550 lbs. of lint valued at £4,701.

About 200 acres will be planted in 1934 but at present the indications are that yields will be very low as a result of the very dry weather in April and May.

A conference of West Indian Sea Island Cotton growers was held at the Imperial College of Tropical Agriculture at Trinidad in November, 1933, and the St. Kitts Cotton Growers' Association was represented by its Chairman, the Honourable A. M. Reid. At this Conference a West Indian Sea Island Cotton Association was formed and the Commissioner of Agriculture was elected as the first President of the Association. The Association should be able to render valuable assistance to Sea Island Cotton growers in the various islands.

COTTON SELECTION.

Cotton selection was carried on along the usual lines. Twenty-one progeny rows of thirty plants each were grown. The following results were obtained on the detailed examination of 21 plants of the row selected as being the most desirable for carrying on the strain:

Mean Maximum Lint length.		Lint per seed.		Seed weight.	
mm.	Range.	mgs.	Range.	mgs.	Range.
52.8	51—55	42	38—45	125	111—131

RETURN OF AGRICULTURAL PRODUCE EXPORTED FROM THE PRESIDENCY OF ST. KITTS-NEVIS FOR THE YEAR ENDED 31ST. DECEMBER, 1933.

Article.	Quantity	Value
Sugar, crystals	22,588 tons	£234,747
Syrup and Molasses	630,749 gallons	2,897
Cotton, Sea Island	88,550 lbs. lint	4,701
Coconuts	56,953	208
Copra	23,520 lbs.	98
Salt	34 tons	9
Vegetables, Tomatoes	28,637 lbs.	221
Vegetables, other		389
Fruit		63
Hides and Skins		276
Horses	32	290
Mules	121	975
Asses	103	131
Cattle	158	595
Sheep	330	180
Goats	78	39
Swine	149	115

EXPORTS OF SUGAR.

The following table gives the Exports of Sugar from the Presidency for the twenty-five years 1909—1933.

Year	Tons	Year	Tons
1909	12,027	1922	9,648
1910	12,510	1923	10,717
1911	11,139	1924	9,699
1912	10,554	1925	15,043
1913	11,312	1926	15,651
1914	9,946	1927	17,363
1915	8,311	1928	18,610
1916	16,106	1929	12,736
1917	15,048	1930	17,637
1918	9,105	1931	10,579
1919	11,015	1932	19,327
1920	12,483	1933	22,588
1921	10,592		

EXPORTS OF COTTON.

The following table gives the Exports of cotton from the Presidency for the twenty-five years ended September 30th, 1933

Year.	St Kitts. lb.	Nevis lb.	Anguilla lb.	Total lb.
1909	207,146	104,250	49,320	360,716
1910	231,150	129,973	43,400	404,523
1911	329,322	344,395	148,595	822,312
1912	332,168	165,329	97,142	594,639
1913	374,594	166,477	112,138	653,209
1914	372,633	268,542	94,372	735,547
1915	397,567	305,154	33,750	736,401
1916	131,859	99,173	49,620	280,652
1917	106,265	196,915	49,399	352,579
1918	2,457	187,748	652	190,857
1919	422,681	307,212	47,869	797,762
1920	288,720	292,627	61,543	642,890
1921	23,970	422,120	nil	446,090
1922	228,612	225,851	50,120	504,583
1923	29,256	510,919	nil	540,175
1924	81,590	234,957	23,342	344,907
1925	186,607	81,844	nil	267,451
1926	297,023	126,014	4,337	427,374
1927	220,095	224,588	nil	444,683
1928	161,360	113,492	1,506	276,358
1929	250,357	436,892	23,463	710,712
1930	365,811	286,791	26,505	679,107
1931	235,668	161,922	31,310	428,900
1932	78,727	16,244	13,150	108,121
1933	116,924	8,563	23,596	149,083

PLANT LEGISLATION.

Ordinance No. 3 of 1907, "The Fumigation of Plants Ordinance" enforces the fumigation of all imported plants at the discretion of the local Agricultural Officer.

Ordinance No. 8 of 1918, "The Cotton Ordinance" regulates the planting of cotton and provides for the destruction of cotton plants.

Ordinance No. 6 of 1923, "The Cotton Ordinance Amendment Ordinance" provides for the inspection of land before the planting of a new crop.

Ordinance No. 2 of 1923, "The Plant Protection Ordinance" provides for the prevention and eradication of diseases and pests affecting vegetation.

Proclamation dated the 21st August, 1930, under the Plant Protection Ordinance, 1923, prohibits the importation of fruits, suckers and every part of the Banana from all places except Barbados, St. Vincent and the Leeward Islands; Coconuts and Coconut Palms from Grenada, St. Vincent, Trinidad and Tobago, Cuba, Jamaica and the countries of Central and South America; Citrus Plants and Fruits from the United States of America, Cuba, Jamaica, Haiti, the Dominican Republic and Porto Rico; Soil from all places; Sugar Cane and all parts thereof, cotton seed and seed cotton, from all places without the written authority of the Governor.

Ordinance No. 11 of 1930, "The Exportation of Fruit Ordinance" regulates the examination and exportation of fruit, prohibits the shipment of defective fruit and makes provision for the export of fruit.

Statutory Rules and Orders, No. 1 of 1931. "The Exportation of Fruit Rules, 1931."

Statutory Rules and Orders, No. 17 of 1932. Proclamation dated 8th November, 1932 prohibiting the importation of Bananas and parts of Banana plants from Barbados.

METEOROLOGY.

The following are summaries of the observations recorded at the Experiment Station, La Guerite, during the year under review.

Barometric Pressure. During 1933 the mean pressure, corrected for temperature and gravity and reduced to sea level, at 9 a.m. was 30.000 and at 3 p.m. 29.926; the highest recorded being 30.135 on February 13th. at 9 a.m. and the lowest 29.520 on July 26th. at 2.35 p.m., when a gale passed North of the island.

Temperature. The mean maximum temperature for the year was 83.2°F. and the mean minimum 73.7°F. The maximum extreme for the year 88°F. was registered on June 21st., 23rd. and 30th.; July 7th.; August 25th. and 27th.; October 2nd. and 3rd. and the minimum extreme 65°F. on February 28th. The mean average temperature was 78.4°F. and the mean monthly range 15.8°F.

Humidity. The mean relative humidity was at 9 a.m. 73.5 per cent and at 3 p.m., 69.9 per cent.

Rainfall. The total rainfall measured at the Experiment Station was 59.32 inches. This fell on 203 days, the greatest fall being 6.93 inches on September 27th. The total average rainfall for the year for 36 stations was 63.97 inches, the average rainfall of the island for the period 1914 to 1933 being 55.48 inches. The average rainfall for 1933 was 13.30 inches below the average for 1932 and 8.49 inches above the average for the past 20 years.

Latitude 17° 20′ N.

Longitude 62° 45′ W.

METEOROLOGICAL REPORT FOR 1933.

AGRICULTURAL DEPARTMENT, ST. KITTS.

Heights above M. S. L. — Barometer 157 feet. Rain Gauge 152 „

Months	Barometric Pressure reduced to Sea Level, 32° Fahrenheit, and corrected for gravity. Inches. 9 a.m.	3 p.m.	Mean.	Highest.	Lowest.	Temperatures °F. Maximum Means.	Minimum Means.	Maximum Extreme.	Minimum Extreme	Mean for Month.	Range for Month.	Dew Point 9 a.m.	Dew Point 3 p.m.	Vapour Pressure Ins. of Mercury. 9 a.m.	3 p.m	Mean.	Relative Humidity per cent. 9 a.m.	3 p.m	Mean.	Inches Rainfall.	No. of days on which rain fell.
January ..	30·024	29·951	29·988	30·107	29·858	80·3	70 8	83	67	75·5	16	68·0	68·0	·689	·689	·689	73·5	68·5	71·0	2·49	17
February ..	30·077	30·009	30·043	30·135	29·880	80·7	69·6	83	65	75·1	18	64·0	65·0	·612	627	·618	66·0	62·5	64·2	1·21	11
March	30·040	29·979	30·010	30·134	29·865	83·0	72·1	85	69	77·5	16	68 0	66·6	·697	·665	·681	70·5	62·0	66·2	1·42	12
April	29·994	29 819	29·907	30·101	29·852	82·8	71·9	86	68	77·3	18	68·6	69·0	·709	·715	·712	71.5	70·0	70·7	2 81	13
May	30·022	29·951	29·987	30·088	29·839	85·2	74.8	87	69	80·0	18	71·6	69 6	·771	·718	·744	70·0	63·5	66·7	2·18	18
June	29·992	29·946	29·969	30·048	29 908	85·8	75·3	88	73	80·5	15	73·4	73 0	·819	·822	·820	72·5	70·0	71·2	2·68	16
July	29·996	29·964	29·980	30·087	29·520	85·5	76·6	88	73	81·0	15	73·6	75·0	·839	·881	·860	76·5	75·0	75·7	7·84	19
August	29 996	29·924	29·945	30·078	29 852	85·4	77·5	88	72	81·4	16	74·0	73·5	·848	·833	·840	74·0	70·8	72·4	2·60	14
September ..	29·947	29·884	29·916	30·036	29·819	80·5	75·0	88	73	77·7	15	74·0	73·5	·848	·833	.840	77·0	75·5	76·2	14·03	22
October	29·963	29·917	29·940	29·978	29·760	84·7	74·9	88	73	79·8	15	73·2	74 0	·833	·848	·840	75·5	74·0	80·0	3·54	14
November ..	29·958	29·822	29·890	30·039	29·837	83·4	74·1	87	72	78·7	15	74·0	73·6	839	·833	·836	81·0	78·0	79·5	11·02	23
December ..	30·021	29.948	29·984	30·124	29·870	81·0	71·8	82	69	76·4	13	69·6	69·0	·724	·727	·725	75·0	70·0	72·5	7·50	24
Means ..	30·000	29·926	29·963			83·2	73·7	86·0	70·2	78·4	15·8	70·8	70·8	·769	·766	·767	73·5	69·9	72·1	59·32	20

RAINFALL RETURN FOR ST. KITTS FOR YEAR 1933.

Station.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Belle Vue	3.73	1·38	1·94	7·07	8·01	12·48	9.22	4·37	21·52	3·33	21·90	9·30	104·25
Willets	3·16	1·02	1·92	4·37	8·04	10·57	9·26	5·10	21·07	3·05	18·45	6·19	92·20
Parsons	3·89	0·95	1·87	4·99	7·83	9·02	8·78	3·62	17·77	2·15	17·26	6·79	84·92
Molineux	2·99	1·73	2·08	5·23	6·09	9·55	9·05	3·34	19·54	3·58	13·63	5·88	82·69
Lodge	3·28	2·27	2·00	3·38	6·14	7·48	10·44	3·76	17·01	2·67	18·09	5·81	82·33
Belmont	3·27	1·08	3·74	3·36	8·23	5·13	10·19	4·78	16·12	2·15	16·01	6·54	80·60
Wingfield	4·33	2·27	4·09	3·21	4·99	3·60	10·42	2·96	16.70	3·50	13·58	7·80	77·45
Caines	2·97	0·97	1·52	4·45	3·83	7·68	9·15	3·02	15·40	1·43	15·14	5·82	71·38
Brothersons ...	3·24	0·60	3·36	1·98	5·92	4·51	8·77	2·88	16·18	2·05	13·28	8·15	70·92
Fountain	2·80	1·50	1·89	2·38	2·38	7·95	7·76	5·06	14·64	3·45	14·17	5·15	69·13
Brighton	2·56	1·62	1·19	3·35	4·29	6·15	7·20	3·02	15·99	2·33	15·66	5·28	68·64
Farm	4·07	2·14	2·27	3·35	2·64	2·63	6·60	2·27	17·72	2·00	17·26	5·57	68·52
Mansion	2·60	1·88	0·99	3·99	4·72	7·72	7·60	3·35	17·77	1·50	12·25	3·72	67·59
Bourkes	3·86	2·04	1·99	4·64	2·32	2·23	9·20	2·29	16·89	2·06	12·08	7·28	66·89
Sir Gillies	4·30	1·30	2·50	2·70	2·00	2·85	8·70	1·80	14·70	2·90	13·00	7·00	63·75
Con Phipps ...	4·92	1·83	3·50	3·28	3·78	2·58	2·25	2·13	16·35	3·08	11·61	7·66	62·97
Estridge	1·39	1·34	0·69	3·83	3·93	8·33	7·46	1·60	15·84	1·07	13·22	3·73	62·43
Stone Fort... ...	3·61	1·48	2·26	1·37	2·75	3·45	7·36	2·66	13·03	3·16	12·32	6·01	59·46
La Guerite... ...	2·49	1·21	1·42	2·81	2·18	2·68	7·84	2·60	14·03	3·54	11·02	7·50	59·32
Douglas	2·09	1·02	0·94	1·91	2·87	5·11	6·26	3·55	14·80	3·90	11·55	5·23	59·23
Needsmust... ...	2·65	0·95	1·25	2·90	1·00	3·75	6·85	2·85	14·60	2·65	11·15	8·10	58.70
La Vallee	4·10	1·69	1·47	2·72	1·54	2·78	4·58	1·93	17·76	1·60	12·69	4·90	57·76
Buckleys	2·24	0·72	1·09	2·82	2·41	2·47	7·38	2·44	13·62	4·32	10·75	7·43	57.69
College	1·71	0·70	0·73	2·95	2·57	5·04	6·47	2·80	14·10	2·45	9·15	8·75	57.42
Stapleton	2·56	1·05	2·21	1·47	2·24	5·94	5·51	2·33	13·26	3·25	10·97	6·15	56·94
Lower Bourryeau...	2·37	1·74	1·27	2·23	3·04	5·28	7·12	2·82	14·43	1·39	11·68	3·55	56·92
Mills	2·13	1·24	1·09	2·32	3·10	6·75	6·55	1·89	14·60	1·24	11·33	3.32	55·56
St. Kitts Factory...	1·98	1·00	1·25	2·29	1·36	3·93	6·32	2·64	13·36	3·03	11·55	6·39	55·10
Hermitage... ...	1.56	0·73	0·90	2·60	2·13	4·34	6·07	1·74	13·87	0·95	12·68	4·14	51.71
Cunningham ...	1·75	1·10	1·06	3·91	3·25	4·46	5·87	2·70	11·78	1·67	10·41	3·48	51·14
West Farm ...	2·08	1·15	0·98	1·63	3·19	2·12	7·29	2·12	11·48	2·49	11·43	5·48	51·44
Frigate Bay ...	1·88	1·12	0·81	2·43	1·24	2·53	6·28	1·75	13·99	1·85	11·40	4·92	50·20
Pond	2·68	0·70	0.58	2·17	7·97	1·00	5·55	2·65	14·05	1·79	8·00	2·93	50.07
Conaree	1·04	0·70	0·83	1·25	1·81	3·02	6·60	3·30	12·78	1·83	10·75	5·00	48·91
Camp	2·25	0·78	0·86	1·80	2·01	2·05	2·16	2·21	10·40	4·28	9·10	6·57	44·47
Canada	1·16	0·82	2·61	1·55	2·61	3·57	3·85	2·39	11.45	1·75	8·77	3·25	43·78

AVERAGE RAINFALL 1914—1933.

In 1914 the average rainfall on 31 Stations was 52.92 in.

1915	„	32	„	75.59 „
1916	„	35	„	69.51 „
1917	„	33	„	43.53 „
1918	„	30	„	52.44 „
1919	„	29	„	62.84 „
1920	„	28	„	37.13
1921	„	29	„	47.09 „
1922	„	33	„	44.84 „
1923	„	30	„	34.58 „
1924	„	28	„	68.13 „
1925	„	32	„	43.54 „
1926	„	27	„	62.57 „
1927	„	29	„	64.36 „
1928	„	29	„	53.25 „
1929	„	28	„	52.55 „
1930	„	31	„	45.98 „
1931	„	31	„	57.60 „
1932	„	33	„	77.27 „
1933	„	36	„	63.97 „

The average rainfall for 20 years is 55.48 inches, so that the rainfall for the year 1933 is 8.49 inches above the average.

AVERAGE MONTHLY RAINFALL.

	1933	1914—1933
	Inches	Inches
January	2.77	3.18
February	1.26	2.01
March	1.70	2.44
April	3.02	4.03
May	3.73	4.16
June	5.02	4.22
July	7.17	5.10
August	2.85	5.37
September	15.24	6.39
October	2.48	6.40
November	12.87	7.22
December	5.84	4.59

DETAILS OF ADMINISTRATION.

EXPENDITURE.

	£	s.	d.
Personal Emoluments	757	10	7
Travelling and Subsistence Allowance	98	5	9
Experiment Stations	146	17	7
Sugar Cane, Cotton and other Experiments	209	0	11
Apparatus, Chemicals and Books	26	3	10
Contingencies	11	13	0
Destruction of wild cotton and cotton pests	16	10	3
Demonstration Plot, Anguilla	41	3	11
Purchase of Vegetable Seeds	39	14	8
Zebu Bulls, Nevis	8	15	8
Irrigation Experiment	13	11	0
Weighbridges, Nevis	199	2	4
Grant to West Indian Sea Island Cotton Association ..	50	0	0
Total	£1,618	9	6
Agricultural Assistant, St. Kitts and Agricultural Instructor, Anguilla (Colonial Development Fund)	535	14	4
Fruit and Vegetable Industry (Colonial Development Fund)	622	19	6

REVENUE.

Experiment Stations	107	11	10
Government Cotton Seed Farm	1,257	2	3
Total	£1,364	14	1

STAFF CHANGES.

Mr. P. Carter, Revenue Officer, Anguilla, was transferred to the Department as Assistant Clerk from the 1st April, 1933. The Department was without the services of a clerk for six months of the year.

OFFICIAL VISITS.

His Excellency the Governor, Sir Reginald St. Johnston, K.C.M.G., His Honour the Administrator, D. R Stewart, Esq., C.M.G.; Professor H. A. Ballou, C.B.E., Commissioner of Agriculture; Mr. G. A. Jones, Assistant Commissioner of Agriculture and Acting Commissioner of Agriculture; Mr. A. K. Briant, Assistant to the Commissioner of Agriculture; Mr. A. C. Shill, Marketing Officer; Mr. P. E. Turner, Soil Chemist, Sugar Cane Investigation Committee, Trinidad, and advisor to the St. Kitts Sugar Cane Investigation Committee, visited the Department during the year.

Dr. J. G. Myers and Mr. H. E. Box, F.R.E.S., Entomologists engaged on the introduction of Lixophaga diatraeae for the control of the small moth borer of sugar cane, also visited the Department.

Mr. J. J. C. Buckley of the London School of Hygiene and Tropical Medicine was given laboratory accommodation while investigating certain problems in connection with tropical diseases in the island.

Mr. J. McGregor, Australian Trade Commissioner in Canada, was also a visitor to the Department.

Mr. C. R. Twin, Assistant Entomologist, Department of Agriculture, Ottawa, Canada, visited the Experiment Station.

AGRICULTURAL EDUCATION.

Lectures on Botany and Soil Science were given twice weekly at the Experiment Station to the senior class from the Grammar School.

These lectures cover the requirements of the syllabus for General Science of the Cambridge School Certificate examination.

During the out of crop season a series of lectures on general agriculture were given once a week to estate overseers. At these lectures there was an average attendance of about nine overseers and the effort appears to have been appreciated.

AGRICULTURAL AND COMMERCIAL SOCIETY AND COTTON GROWERS' ASSOCIATION.

The Agricultural Superintendent continued to perform the duties of Secretary-Treasurer of these two bodies.

Report of the Agricultural Instructor, Nevis

For the Year 1933.

DISTRIBUTION OF PLANTS AND SEEDS.

The following plants, seeds, &c. were distributed from the station during the year:—

Ornamental trees and plants	127
Gliricidia	200
Grafted Mangoes	12
Algaroba (Ceratonia siliqua)	23
Saman	28
Budded Oranges	3
Guava	3
Cashew	3
Sapodilla	2
Avocado Pears	1
	402

PLOT EXPERIMENTS.

Experiments with economic and food crops were carried out at the experiment station and seeds and cuttings of the varieties giving best results were distributed.

The following is a list of the seeds and cuttings distributed:—

Sweet Potato cuttings	2,500
Cassava cuttings	920
Yams lbs.	545
Seed Corn lb.	21
Peas and Beans lb.	8
Selected cotton seed lb	9,549
Pine-apple Slips	44

VEGETABLE INDUSTRY.

As in the past vegetable seedlings were raised in a nursery plot at the experiment station. The seeds were germinated in the nursery and the seedlings supplied to growers at a price just sufficient to cover cost.

The following is a list of the seedlings distributed:—

Onion seedlings	252,000
Tomato (Marglobe)	148,300
Cabbage	10,560

LAND SETTLEMENT NURSERY.

In connection with the Land Settlement Scheme in Nevis a nursery for the purpose of raising suitable planting material for the allotment holders was established on lands rented from Bath Plain estate. A plot of two acres was planted in sugar cane of the varieties B.H.10(12) and S.C. 12/4 during the months of May and June, and plots of sweet potatoes and selected cotton were planted later. The canes were cut in November and December and 96,470 cuttings distributed amongst the peasants.

COTTON SELECTION.

Work on cotton selection was continued on the same lines as in previous years.

The following table shows some of the characteristics of the best plants in each progeny row:—

Plant No.	No. of Bolls	Weight of Seed cotton ozs.	Mean Max. Length m. m.	Max. Length m. m.
14/3	183	13.5	49.9	52
21/2	80	5.0	50.8	54
22/1	82	6.0	50.8	53
27/2	166	14.5	50.9	53
28/3	173	10.0	51.6	53
30/2	94	6.0	50.7	53

WORK IN CONNECTION WITH INSECT PESTS AND FUNGOUS DISEASES AND THEIR CONTROL.

Mosaic Disease. No trace of this disease was observed during the year.

Gumming Disease. This disease is on the increase. Fully 60% of the canes grown are susceptible varieties, and in practically every field, gumming disease was observed.

Moth Borer. This is a serious pest of the sugar cane in Nevis, and it occurs to a fairly great extent throughout the island.

Root Fungus. This disease was observed in a few localities during the year, especially during the latter part.

COTTON.

The cotton leaf worm (Alabama) did no damage to the crop this year, and there were only very slight attacks here and there.

Pink boll worm. This pest made its appearance fairly early in the season, and it was expected that the crop would have been seriously damaged, but the attack did not develop and the damage done was not very great. It would appear that excessive damp weather is unfavourable to its increase.

Cotton Stainer. The cotton stainer is increasing, and occurred throughout the picking season, especially in the southern part of the island.

The cleaning up of the cotton fields for the Close Season was fairly satisfactory, and the fumigation of cotton seed at the ginneries was carried out in accordance with Regulations.

VEGETABLES.

Green Bug. This pest was not so troublesome as it had been in the past.

Scarabee (*Cryptorhynchus batatae*). This pest was not so plentiful this season. Control largely due to rotation of crops.

Slugs continue to be very troublesome.

INSECTICIDES.

A supply of Paris Green and lime was in stock at the Experiment Station as in the past, but none of it was supplied to growers this season, as there was no need for it.

Disinfection and Fumigation of plants and seeds.. In accordance with the provisions of the Plant Protection Ordinance 5 consignments of plants and seeds were received at the experiment station for fumigation or disinfection.

PROGRESS OF CHIEF INDUSTRIES.

COTTON.

The 1932-33 cotton crop was all reaped by the end of May 1933, and the total production was 10,042 lb. of lint from about 100 acres being at the rate of about 100 lb. of lint per acre.

There has been a revival of interest in the cotton industry, and the acreage planted during the season under report was about 600 acres. The crop was planted during the month of October 1933, and the seed used was all hand selected seed supplied through the Agricultural Department. The germination was good, but excessive rains interfered with weeding operations in some places and the crop was stunted. The greater part of the crop, however, did fairly well and a return of about 100 lb. of lint per acre is expected.

No damage was done to the crop by the cotton leaf worm, and while the pink boll worm made an early appearance, a severe attack did not follow.

The cotton stainer was very plentiful in certain parts of the island.

SUGAR CANE.

Very soon after the erection of the Basseterre Sugar Factory cane growers in Nevis within easy reach of shipping began to sell canes to the Factory, and during the period of high prices for canes, a great part of the island's

cane crop was disposed of in this way. In the New Castle district where shipping facilities are good, the shipping of canes to the Factory was continued each year, but as prices fell, the acreage under canes in other parts of the island was more or less confined to the immediate neighbourhood of the muscovado mills, and gradually the cane industry declined till in 1930-31 the acreage planted in canes was not more than 300 acres. During the past few years the matter of the restoration of the cane industry was widely discussed, with the result that arrangements have been made with the Basseterre Factory for the purchase of canes in Nevis through an agent. The Government greatly assisted in bringing this about, and also erected two weigh-bridges—one at Charlestown and the other at New Castle.

The weigh-bridge at Charlestown was in operation during the season under review, but the one at New Castle was not erected until the season was nearly over.

Three hundred and forty-five tons of canes were shipped from Charlestown through the agent and about 2,000 tons from New Castle by various independent shippers as in the past. The scheme has had the effect of stimulating the planting of cane, and the acreage under canes for next crop is about 1,000 acres, and it is expected that a greater proportion of the crop will be sold to the Factory. The growers were paid 9/6 per ton for canes delivered at the scale, but transport charges at present bear fairly heavily on the growers.

The muscovado mills were all in operation during the season, and the sugar was all disposed of in the local market.

Planting for the 1935 crop is in progress, and there will be a fairly great increase in the acreage, and a greater proportion of the crop will be planted in B.H. 10(12) and S.C. 12/4.

COCONUTS.

The coconut plantations of the island continue to do well, and were not attacked by any serious pests or diseases during the year. At Pinneys, practically the whole of the crop is being made into sun-dried copra.

LIVE STOCK.

There was no outbreak of any disease amongst the live stock during the year, and there was less loss of stock from poor pasture and insufficient water. There is however, very much room for improvement in the method of raising stock in the island, which would eliminate such heavy losses when a drought occurs.

The two Government-owned pure-bred Zebu bulls are in good health and continue to do good service.

The Black-Head Persian Ram took sick and was transferred to St. Kitts where he died shortly after. Another Persian Ram was imported and he also died after being in the island about 4 months. The Rams were kept in the different flocks about the island.

GROUND PROVISIONS.

The usual ground provisions were grown by the peasants during the year, and the yam crop in particular was good. "Scarabee" did not do so much damage to the sweet potato crop as in the past.

About the same acreage was planted in tomatoes as last year, and year by year a greater proportion of the crop is sold in the local market.

VEGETABLE BUREAU.

The Government packing house was opened for operations on December 12th, 1932, and the first shipment was made on December 21st, and the last on March 15th, 1933.

Very favourable reports were received from Canada as to the pack and quality of the vegetables, but prices were very discouraging. The shipments were as follows:—

Dec. 21st.	..	199	crates	Tomatoes,	price	per	crate	gross	..	72	cts.
Jan. 4th.	..	260	„	„	„	„	„	„	..	81	„
Jan. 11th	..	176	„	„	„	„	„	„	..	40	„
Jan. 25th.	..	296	„	„	„	„	„	„	..	70	„
Feb. 8th.	..	161	„	„	„	„	„	„	..	60	„
„ „	..	6	crates	Sweet Potatoes	„	„	„	..	1.50	„	
Feb. 15th.	..	65	crates	Tomatoes,	„	„	„	„	..	70	„
March 1st.	..	100	„	„	„	„	„	„	..	1.39	„
March 15th.	..	86	„	„	„	„	„	„	..	1.40	„

The total gross proceeds amounted to $1,030.24 and the nett proceeds to $471.06.

The following statement shows the total receipts and expenditure for the season:—

	Receipts.			Expenditure.		
	£	s.	d.	£	s.	d.
Nett Proceeds Account Sales	98	1	9	..		
Crates	..			49	18	8
Liners	..			1	8	2
Labels	..			6	3	8
Wraps	..			14	0	10
Nails	..			2	5	6
Packing House Levy	..			11	4	10
Cold Storage	..			1	12	8
Packing House Expenses	..			19	8	1
Porterage and Lighterage	..			7	15	2
Truckage	..			1	17	6
Telegrams	..			2	5	9
Advances to Growers on Tomatoes ..	..			55	4	10
Deficit on Account Sale No. 3	..				11	4
Total loss	75	15	3	..		
	£173	17	0	£173	17	0

PURCHASING OF PEASANTS' COTTON AND GOVERNMENT GINNERY.

Purchasing of the peasants' cotton was undertaken again this year by the Government on the same lines as in the past. An advance at the rate of 3 cents per lb. was paid on clean Sea Island cotton delivered at the cotton house. Purchasing was carried out at the Vegetable Packing house and the cotton was ginned at the Government Ginnery under the supervision of the Agricultural Instructor.

The total quantity of seed cotton purchased was 26,612 lb. and the lint obtained from it was 7,522 lb. which was shipped to the British Cotton Growing Association on June 30th, 1933, in 17 bales.

The cotton seed was sold to Spooners Factory, St. Kitts, except a supply of the best which was hand selected and sold to growers to plant the 1933-34 crop. An early sale of the cotton was effected at a price which allowed a bonus of 3.25 cents per lb. to the peasants after deducting expenses. The total cost of the undertaking was £260. 11. 1. and the receipts from the sale of cotton and cotton seed was £444. 16. 3. leaving a profit of £184. 5. 2. to be divided between the peasants at the rate of 3.3 cents per lb. on the seed cotton.

The Government Ginnery started operations on June 12th 1933 and the total quantity of lint ginned and baled was as follows:—

Peasants' Crop .....17 bales.....7,522 lb. nett.

LAND SETTLEMENT.

Some progress has been made on the Low Ground settlement. Forty-three allotments have been taken up and brought under cultivation. The crops grown are sugar cane, cotton, ground provisions and vegetables. The peasants on the whole are working their holdings fairly well.

A nursery plot for raising suitable planting material has been established at the Experiment Station from which the allotment holders are supplied.

The following is a list of the plants, seeds &c., distributed during the year:—

Cane Plants	54,510
Onion seedlings	33,800
Tomato seedlings	19,150
Cabbage seedlings	240
Selected cotton seed lb.	524
Cassava cuttings	400
Sweet Potato cuttings	250
Yams lb.	65
Seed corn lb.	19
Peas and Beans lb.	3

Two hundred Gliricidia and 30 Algaroba plants were also planted in the paddock.

Work in connection with the improvement of the pasture was started during the year. About 50 acres of the pasture were cleared of Acacia which practically covers the whole area allotted for pasture. The area cleared has been wired in and planted in Sour Grass.

The pasture at Low Ground affords ample grazing for the peasants' stock, but the water supply is very inadequate: arrangements, however, are being made to improve this during the coming year.

Roads to the allotments were made and repaired during the year, which work has much improved the appearance of the settlement and greatly facilitates the marketing of produce.

The Land Settlement scheme is becoming more popular, and the purchase of Hamilton estate for a settlement is contemplated.

AGRICULTURAL EDUCATION.

Creditable work is being carried out on only a few of the school gardens, but generally work on the school gardens is neglected.

AGRICULTURAL MATTERS.

The usual correspondence in connection with the work of the department has been carried on.

The Agricultural Instructor pays regular visits to the estates and peasants' plots in the different parts of the island, and generally is in close touch with matters of general agricultural interest to the island. The Land Settlement, in particular, receives a great deal of his attention.

The Agricultural and Commercial Society, of which the Agricultural Instructor is Honorary Secretary, held four meetings during the year and the following were the chief matters discussed:—Local Cotton Growers' Association, Raising of Beef Cattle, and Shipping of Canes to the Basseterre Factory.

In connection with the West Indian Sea Island Cotton Association, the Agricultural and Commercial Society of Nevis functions as the Local Cotton Growers' Association.

OFFICIAL VISITS.

Visits were paid to the Station by Mr. G. A. Jones, the Commissioner of Agriculture for the West Indies, Mr. A. K. Briant, the Assistant to the Commissioner, Mr. A. C. Shill, the Marketing Officer, and Mr. R. E. Kelsick, the Agricultural Superintendent.

PUBLICATIONS RECEIVED.

The following publications have been regularly received and are hereby gratefully acknowledged:—The Journal of the Imperial College of Tropical Agriculture; Journal of Agricultural Research, and Experiment Station Record, United States Department of Agriculture; Journal of the Empire Cotton Growing Corporation; Journal of the Agricultural Society, Jamaica; Report of the Local Department of Agriculture, Barbados; Report of the Experiment Station, Porto Rico; Report of the Agricultural Department, and the Agricultural Bulletin, Bermuda; Climatological Report, San Juan, Porto Rico; the "G—G" Review, Trinidad.

REPAIRS TO BUILDINGS.

No repairs were done to the buildings at the station during the year.

STAFF CHANGE.

The post of Foreman at the station was abolished and Mr. R. A. Hull was transferred to the Public Health Department. Mr. J. Barrett was Clerical Assistant at the Station, from April, 1933.

METEOROLOGICAL RETURNS.

The total rainfall for the year was 61.66 inches which is 5.99 inches less than that of 1932.

Rain fell on 153 days during the year, and the heaviest fall recorded for any one day was 2.35 which occurred on September 28th, 1933. The following tables show the monthly rainfall at the Experiment Station for the year under review and also that for the past twenty-eight years—1906–1933.

Month, 1933.	Rainfall Inches.	No. of days on which rain fell.	Maximum fall for any one day.
January	3.19	12	.37 (16th).
February	1.72	7	.39 (13th).
March	2.39	8	.43 (30th).
April	2.01	10	.60 (8th).
May	3.20	5	1.16 (17th).
June	4.78	12	.94 (20th).
July	8.45	16	2.03 (26th).
August	4.42	12	.93 (28th).
September.. ..	10.66	18	2.35 (28th).
October	4.29	6	1.41 (17th).
November	10.68	25	1.56 (2nd).
December	5.87	22	.67 (8th).
	61.66	153	

RAINFALL AT THE EXPERIMENT STATION, NEVIS FOR THE PAST TWENTY-EIGHT YEARS 1906—1933.

Year	Jan. Ins.	Feb. Ins.	Mar. Ins.	April. Ins.	May Ins.	June. Ins.	July. Ins	Aug. Ins.	Sept. Ins.	Oct. Ins.	Nov. Ins.	Dec. Ins.	Total. Ins
1906	3·28	2·22	1·71	2·19	3·49	7·30	4·11	2·94	18·93	3·10	3·42	6·67	60·11
1907	3·22	2·32	1·23	1·08	3·30	4·12	4·86	2·64	3·76	6·92	2·54	7·46	43·45
1908	2·58	1·70	7·16	2·18	4·24	2·83	3·34	5·02	6·98	1·44	6·93	6·10	50·50
1909	3·86	3·46	0·96	2·72	1·62	9·52	4·52	8·71	3·46	7·38	2·44	2·74	50·69
1910	5·24	3·82	1·33	0·44	1·08	4·24	2·80	7·10	7·00	1·86	3·32	4·68	41·91
1911	6·38	2·78	2·32	4·02	4·08	0·92	2·72	2·34	5·30	3·58	2·80	8·84	46·08
1912	3·84	0·68	2·66	4·20	0·79	2·51	3·56	3·46	3·19	5·25	6·43	2·85	39·42
1913	7·18	1·96	4·14	0·81	4·47	2·23	1·77	4·92	3·59	3·89	4·41	3·36	42·64
1914	3·40	2·74	3·10	2·52	6·29	2·65	5·16	4·72	2·20	4·17	12·44	4·16	53·55
1915	4·40	2·03	0·28	5·65	2·79	2·52	8·14	4.34	4·71	5·88	5·37	5·89	52·10
1916	4·53	3·99	2·19	0·75	3·82	2·07	14·54	7·81	2·00	10·86	6·74	1·74	64·04
1917	1·39	3·28	2·57	1·00	4·27	6·73	3·46	4·02	8·18	5·00	2·11	2·09	44·10
1918	2·18	3·27	2·75	2·59	6·14	2·02	4·08	5·12	6·21	6·36	10·98	2·28	53·98
1919	2·22	1·16	1·33	2·79	2·10	2·29	4·02	1·66	2·10	8·41	7·22	2·89	38·22
1920	3·71	2·86	1·25	0·02	1·22	2·22	1·79	4·61	6·05	6·76	3·30	4·39	38·18
1921	5·84	2·79	3·86	1·40	0·82	0·80	4·94	6·58	4·20	7·34	3·66	3·95	46·18
1922	1·75	1·80	4·71	3·33	1·95	3·09	4·05	3·88	6·84	4·27	2·14	5·81	43·62
1923	1·51	2·41	5·42	2·04	0·45	5·62	1·85	2·63	1·16	5·28	4·23	3·16	32·74
1924	2·46	3·29	0·05	2·49	1·58	2·48	4·50	24·35	4·05	5·11	3·57	4·71	58·64
1925	2·65	0·99	1·49	1·06	1·64	1·92	3·53	4·81	4·12	6 94	2·74	0·31	32·20
1926	2·08	1·97	1·78	3·42	11·77	2·92	3·89	4·94	6·24	7·15	3·62	6·59	56·37
1927	4·44	1·46	4·01	2·79	9·32	2·60	6·52	3·48	4·48	10·05	5·69	1·22	56·06
1928	2·87	2·10	3·21	3·78	1·31	3·96	4·06	2·59	1·98	5·84	4·07	4·37	40·17
1929	3·92	2·52	5·38	2·12	3·10	2·58	6·95	5·21	2·69	3·45	5·07	5·57	48·56
1930	9·05	0·63	0·34	1·73	1·66	2·83	2·53	2·06	3·28	2·21	7·51	2·71	36·56
1931	1·00	1·47	0·37	4·00	2·13	3·20	5·68	6·59	6·94	5·90	6·83	3·89	48·00
1932	9·11	1·85	1·83	1·92	6·88	4·28	5·98	8·70	3·28	8·70	8·74	6·38	67·65
1933	3·19	1·72	2·39	2·01	3·20	4·78	8·45	4.42	10·66	4·29	10·68	5·87	61·66

The average rainfall for the last twenty-eight years was 48.12 inches.
Rainfall during hurricane of September 21st., 1928, not available.

TEMPERATURE.

Readings of the Maximum and Minimum and the Wet and Dry Bulb thermometers are taken daily at the station at 9 a.m. and 3 p.m.

The mean Maximum temperature for the year was 84.6°F, and the mean Minimum 74.3°F.

The highest Maximum was 89°F registered on August 31st., September 1st., October 6th., and the lowest Minimum was 64°F on February 2nd.

The mean average temperature for the year was 81.9°F, and the mean monthly range was 10.1°F.

Report of the Agricultural Instructor, Anguilla

For the Period 1st January to 31st December, 1933.

WEATHER CONDITIONS.

The total rainfall for the year 1933 was 56.24 inches, which is 8.36 inches more than that of last year. Rain fell on 93 days during the year and the highest fall recorded for any one day was 4.20 inches on the 9th. October.

The rainfall recorded at Wall Blake estate for the same period was 64.68 inches and at East End school 51.22 inches, with an overflowing gauge on the 9th. October.

It is to be regretted that through lack of funds the local Inspector of Schools was unable to supply the Road and West End schools with rain gauges.

The following table shows the monthly rainfall at the Demonstration Plot for the year under report.

Month	Rainfall	No. of days on which rain fell.	Maximum Fall.	Date
January	1.67 ins.	9	0.30 ins.	3rd.
February	0.92	4	0.62	18th.
March	0.55	3	0.30	1st.
April	1.51	5	0.63	13th.
May	6.51	6	3.72	28th.
June	5.12	9	1.80	3rd.
July	5.58	7	1.80	25th.
August	5.10	5	1.50	13th. & 19th.
September	13.25	15	2.40	5th. & 27th.
October	5.79	7	4.20	9th.
November	8.24	17	1.50	3rd.
December	2.00	6	0.60	31st.
Total	56.24 inches	93 days		

DISTRIBUTION OF SEEDLINGS AND PLANTING MATERIAL.

The following is a list of planting material distributed to the peasants:—

Sweet Potato	2,500 cuttings.
Onion	12,000 seedlings.
Cabbage	136 „
Egg plant	24 „
Tomato	48 „
Yam	800 lbs.
Tannia	50 „
Black eye peas	20 „
Maize	25 „
Elephant Grass	20,000 cuttings.
Cassava	200 „
Uba Cane	4,000 „

Vegetable seeds were also sold to the peasants.

THE DEMONSTRATION PLOT.

The Revenue and Expenditure of the Demonstration Plot are summarised below:

Plot.	Crops.	Expenditure.			Revenue.			Profit.		
		£	s.	d.	£	s.	d.	£	s.	d.
A	Green Dressing, 1932 Sweet Potatoes, 1932 Sweet Cassava, 1933		19	1	1	3	4		4	3
B	Irish Potatoes, 1931 Cassava 1932 Green Dressing, 1933		15	6	3	9	4	2	13	10
C	Guinea Corn 1932 Cassava 1933	1	10	10		7	0	1 (loss).	3	10
D	Cultivated and manured after sweet potatoes, vegetables and Irish potatoes. Yams and Tannias, 1933	3	19	3	1	14	0	2 (loss).	5	3
E	Beans, 1931. Vegetables and Cotton, 1932. Onions and Cabbage, 1933	2	5	4	4	0	0	1	14	8
F	Aloes 1932. Peanuts 1933. Yams 1933. ..	1	18	1		12	6	1 (loss).	5	7
G	Vegetables after yams 1931–32. Blackeye peas. Sugar cane 1933	3	7	1	5	10	0	2	2	11
H	Maize, 1931. Elephant grass, 1932–33 ..	2	8	4		..		2 (loss).	8	4
I	Yams 1932. Maize 1932. Cotton, 1933 ..	2	13	10	4	2	4	1	8	6
J	Elephant Grass, 1932 Guinea Grass, 1932 .. Vegetables, 1933 ..	2	6	10		..		2 (loss).	6	10
	Total	£22	4	2	£20	18	6			

INSECT PESTS AND DISEASES.

VEGETABLES AND GROUND PROVISIONS.

Egg Plant. Excellent results were obtained until attacks of the mealy bug made it necessary to destroy the plants.

Tomatoes. In no part of the island was this crop successful. The plants grew luxuriantly but the fruiting was very poor. There were no diseases or pests to have caused any material loss this season.

Cabbage. No crickets were observed this year. The crop was on the whole quite satisfactory and some heads weighed 6 lbs.

Lima Beans. These were quite healthy and satisfactory results were expected judging from the amount of flowers put out but the fruiting was very disappointing. Another bean, the African Black, was introduced by Mr. C. Rey. It proved a complete failure. Plants very soon became discoloured and then dried up.

Onions. This crop has again proved a success. There was a slight attack of worms which was controlled by hand picking. Seedlings were sold locally and also in the neighbouring island of St. Martin.

Other vegetables such as carrots, turnips, kohl rabi. etc. were planted throughout the island and were quite satisfactory.

The usual ground provisions were planted and with the exception of the sweet potato, which was attacked by Scarabee, gave good results.

Cotton. The leaf eating caterpillar did no damage this year. Beetles appeared in great numbers in the early stages of the crop but were successfully controlled by handpicking. The pink boll worm was observed in November and damaged the crop considerably.

THE COTTON INDUSTRY.

The 1932-33 crop yielded 18,767 lbs. lint which was 7,233 lbs. less than that of the previous year. A meeting of the Cotton Advisory Committee was convened on the 21st March and the dates for the close season and planting were allowed to remain the same as in the previous year. Mr. G. A. Jones, the Commissioner of Agriculture, was present at the meeting and was in favour of a four months' close season.

The 1933-34 crop is estimated at 100 bales or 25,000 lbs. lint.

The quality of the lint has improved and the seed for planting the island's crop was supplied from Mr. C. Rey's ginnery, where it was hand picked.

The multiplication plot was again carried on and was planted on Wall Blake estate. Seeds for planting the plot were obtained from the Agricultural Superintendent at St. Kitts.

Moco Cotton. This is a new variety of perennial cotton introduced from St. Vincent by the Commissioner of Agriculture. The seeds were planted on the 24th July. The trees grew very tall, some being ten feet high. Six trees were selected and the flowers self-fertilized. Boll shedding was very high and practically no seed cotton was saved.

The rainfall during the cotton growing season is given below:—

September	13.25	inches.
October	5.79	„
November	8.24	„
December	2.00	„
January	5.00	„
February	1.50	„
Total	35.78	„

AGRICULTURAL EDUCATION.

School children were shown around the Demonstration Plot and the methods of planting sugar cane and vegetable seeds were explained by the Agricultural Instructor, who also gave a lecture on the importance of rotation of crops.

LIVE STOCK.

The pure bred Berkshire boar belonging to the Government served 20 sows during the year.

Mr. Rey's pure bred Holstein bull and half bred heifer, which were imported from the stock farm in Trinidad, remain in good condition. One of the heifers died during the year.

The other live stock of the island were in fair condition during the year.

LAND SETTLEMENT SCHEME.

Settlers are working their plots quite well and are paying their purchase instalments satisfactorily. No houses have yet been erected on the estates.

SUGAR CANE.

Several small plots were planted this year in all parts of the island but chiefly at "the Quarter" where it is quite evident that the lands in years of good rainfall will yield from 30 to 40 tons of cane per acre if they receive proper cultivation and manurial treatment. The peasants are all very keen on cane planting and have been encouraged by the satisfactory results obtained this year. The canes are disposed of locally but the peasants would like to see a small muscovado sugar mill erected for producing syrup. This could be sold in Anguilla and the neighbouring islands.

OFFICIAL VISITS.

The visitors to the Demonstration Plot and the Pumping Station during the year under report are as follows:

His Excellency the Governor Sir Reginald St. Johnston, K.C.M.G., the Captain H.M.S. Scarborough, Mr. G. A. Jones, Commissioner of Agriculture, Mr. R. E. Kelsick, Agricultural Superintendent, Mr. G. B. Gregory, Asst. Agricultural Offier, His Honour W. M. Wigley, O.B.E., the Honourable G. C. Johnson, I.S.O., Treasurer, Dr. Minett, Dr. J. S. Cramer, Dr. MacFadyen and Mr. K. S. Lockhart, Auditor.

PUMPING STATION.

The level of water in the well remains constant. During the year flower beds were made up and planted in Bougainvilleas, Hibiscus, Poinsettia, etc.

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